PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

Select Provisions of the 2008 Farm Bill Regarding the Conservation Reserve Program

United States Department of Agriculture
Farm Service Agency
1400 Independence Avenue, SW
Washington, D.C. 20250-0503

Final
November 2008

COVER PAGE

Proposed Action: The United States Department of Agriculture (USDA) and the Commodity Credit Corporation (CCC) have agreed to implement Select Provisions of the 2008 Farm Bill, reauthorized with new Title II provisions enacted by the Food, Conservation, and Energy Act of 2008. The CCC of the USDA proposes to implement selected changes to the Conservation Reserve Program (CRP) to include new adjusted gross income limitations and cost sharing payments related to trees, windbreaks, shelterbelts, and wildlife corridors. The Farm Service Agency (FSA) administers the CRP on behalf of the CCC. Additionally, CCC proposes changes to provisions of the Farmable Wetlands Program (FWP). These changes include enrollment eligibility of three new categories of land: (1) land on which a constructed wetland is to be developed to receive flow from a row crop agricultural drainage system designed to provide nitrogen removal and other wetland functions; (2) land that was devoted to commercial pond-raised aquaculture in any year during 2002 through 2007; and (3) land that, after January 1, 1990, and before December 31, 2002, was cropped during at least three of 10 years and was subject to the natural overflow of a prairie wetland. In addition, changes to the FWP would authorize enrollment of buffer land that would enhance wildlife benefits adjacent to natural overflow of a prairie wetland to the extent practicable in terms of upland to wetland ratios, as determined by the Secretary.

Type of Document: Final Programmatic Environmental Assessment

Lead Agency: USDA, Farm Service Agency on behalf of CCC

Further Information: Matthew Ponish
National Environmental Compliance Manager
USDA/FSA/CEPD
1400 Independence Ave., SW
Mail Stop 0513
Washington, DC 20250
Or by email at Matthew.Ponish@wdc.usda.gov

Comments: This Final Programmatic Environmental Assessment was prepared in accordance with USDA FSA National Environmental Policy Act implementation procedures found in 7 CFR 799, as well as the National Environmental Policy Act of 1969, Public Law 91-190, 42 U.S.C. 4321-4347, 1 January 1970, as amended. A copy of this Final Programmatic Environmental Assessment can be found at: http://www.fsa.usda.gov/FSA/webapp?area=home&subject=ecrc&topic=nep-cd
Written comments regarding this assessment may be submitted to: 2008 CRP Farm Bill PEA Comments, c/o Geo-Marine Incorporated, 2713 Magruder Boulevard, Suite D, Hampton, Virginia 23666, online at: http://public.geo-marine.com, or via email at: 2008crpfarmbill@geo-marine.com.

This Page Intentionally Blank

EXECUTIVE SUMMARY

BACKGROUND

The United States Department of Agriculture (USDA) Farm Service Agency (FSA) proposes to implement certain changes to the Conservation Reserve Program (CRP) reauthorized with new Title II provisions enacted by the Food, Conservation, and Energy Act of 2008 (2008 Farm Bill) . These changes include modification to the Farmable Wetlands Program (FWP) under CRP, thinning of trees, and adjusted gross income (AGI) provisions as they apply to CRP. This Programmatic Environmental Assessment (PEA) is being prepared to examine the potential environmental consequences associated with implementation of these changes to the provisions in the 2008 Farm Bill, and provide decision makers information to develop new regulations. In 2003, a Programmatic Environmental Impact Statement (PEIS) for the reauthorization of the CRP in Title II of the Farm Security and Rural Investment Act of 2002 (2002 Farm Bill) was completed (USDA FSA 2003) and a Record of Decision was published; therefore, only those aspects of CRP not addressed in the PEIS are evaluated in this PEA.

PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to promulgate regulations to implement select changes to the CRP, including modification to the FWP, tree thinning, and certain AGI provisions, as provided for in the 2008 Farm Bill. The need for the Proposed Action is to fulfill FSA's responsibility as assigned by the Secretary of Agriculture to administer certain conservation provisions of the 2008 Farm Bill. This legislation, which was passed into law on June 18, 2008, reauthorizes the CRP through September 30, 2012, and stipulates changes to gross income limitations and cost sharing payments related to trees, windbreaks, shelterbelts, and wildlife corridors, as well as changes to the eligibility and payment requirements of the FWP.

PROPOSED ACTION AND ALTERNATIVES

The 2008 Farm Bill reauthorizes the CRP through September 30, 2012, stipulating a number of changes to the program. This PEA only assesses those mandatory changes to CRP stipulated in the 2008 Farm Bill that have potential environmental impacts not previously assessed under the 2003 CRP PEIS (USDA FSA 2003).

The proposed action would implement certain changes to the CRP as enacted by Congress in the 2008 Farm Bill. These changes include:

- Expanding FWP land eligibility by including:
    - Land on which a constructed wetland is to be developed to receive flow from a row crop agricultural drainage system designed to provide nitrogen removal and other wetland functions;
    - Land that was devoted to commercial pond-raised aquaculture in any year during 2002 through 2007;

  - Land that, after January 1, 1990, and before December 31, 2002, was cropped during at least three of 10 years and was subject to the natural overflow of a prairie wetland;
  - Buffer acreage to protect the wetland and to accommodate farming practices for wetlands, constructed wetlands, and aquaculture ponds; and
  - For flooded farmland, buffer land that would enhance wildlife benefits adjacent to natural overflow of a prairie wetland to the extent practicable in terms of upland to wetland ratios, as determined by the Secretary.

- Limiting FWP enrollment to:
  - 40 acres for farmable wetlands and constructed wetlands;
  - 20 acres for flooded prairie wetland; and
  - Acreage for aquaculture pond and associated buffer to be determined by the Secretary in consultation with the State Technical Committee.
- Cost sharing for thinning of certain tree stands would be authorized to improve wildlife benefits and the condition of resources on the land.
- New limits and a possible waiver from the AGI limitation would apply for environmentally sensitive land of special significance.

The Proposed Action would also include the implementation of the new conservation practices (CPs) that would be developed for the conversion of the new categories of lands eligible for enrollment under the FWP.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

There would be beneficial impacts to a number of resources associated with the implementation of the Proposed Action. These benefits would last 10 to 15 years, depending on contract length. A summary of the potential impacts of the Proposed Action and the No Action Alternative is presented in Table ES-1.

Table ES-1. Summary of Environmental Consequences

Resources	Proposed Action (Expansion)	No Action (Current Program)
Biological Resources vegetation, wildlife, and protected species	Long-term beneficial impacts on vegetation, wildlife, and threatened and endangered species would result from implementing select provisions of the 2008 Farm Bill. Constructed wetlands provide benefits on a national scale of allowing areas that were not previously eligible to become wetlands. Constructed wetlands are valuable habitat for migratory birds and other wildlife, especially those that are playas, which temporarily store water in areas that are predominately dry. Converting aquaculture ponds to more natural wetlands provides wildlife habitat and improves the water quality of the ponds. Only marginally productive aquaculture ponds are likely to be converted, or ponds would be converted for non-economic reasons. Maintaining an appropriate water level is important for obtaining wildlife, vegetation, and protected species benefits, otherwise, adverse impacts to these biological resources may result. If aquaculture ponds were previously unprotected from predation of migratory waterfowl, converting them to natural wetlands may reduce available fish food sources for certain species of migratory waterfowl. Incorporating flooded prairie wetlands into the FWP adds a buffer that provides additional habitat areas for a variety of wildlife. Positive wetlands benefits would occur downstream to aquatic biological systems through increased water quality resulting from the restoration and construction of wetlands under FWP. Tree thinning would only be approved if it improves the condition of resources on the land. Tree thinning improves the health and vigor of the vegetative stand comprising the conservation cover and maintains more open and diverse habitat for wildlife species. Potential short-term localized adverse impacts of tree thinning include increased soil erosion and compaction, temporary noise from machinery and loss of wildlife habitat;	Under the current FWP, only 182,125 acres have been enrolled out of the authorized 1 million acres; therefore, even without the inclusion of the new types of land eligible for enrollment, the program can grow. Lands would continue to be enrolled under CP27 and CP28; however, the benefits of expanding the program to constructed wetlands, aquaculture ponds, and flooded prairie wetlands and associated buffers would not be realized. The impacts of the current FWP on biological resources were evaluated in detail in the 2003 CRP PEIS (USDA FSA 2003). The long-term benefits to vegetation, wildlife and protected species that would be achieved by waiving the AGI limitations for environmentally sensitive lands of special significance would not be realized. Tree thinning is currently authorized by CRP and would continue as currently configured, with no cost share for tree thinning, and a forfeit of the annual rental payment if the refuse generated is commercially used. Site-specific environmental evaluations would determine the potential presence of threatened or endangered species and their critical habitat. If listed species are present, consultation with USFWS would occur prior to implementation of the practices to protect these resources.

Table ES-1. Summary of Environmental Consequences (cont'd.)

Resources	Proposed Action (Expansion)	No Action (Current Program)
Biological Resources vegetation, wildlife, and protected species	however, these would be minimized through the implementation of best management practices (BMPs). The AGI potential waiver provision for environmentally sensitive lands of special significance is beneficial for biological resources since it would allow additional lands into CRP that would otherwise not qualify. If a site-specific environmental evaluation determines the potential presence of threatened or endangered species and their critical habitat in the area, consultation with USFWS would occur prior to implementation of the practices to protect these resources. Potential short-term localized adverse impacts to biological resources are associated with preparation of the land for installation of the conservation practice and include the use of noise-producing machinery during installation and periodic management; however, the noise generated would be similar to that of farm machinery.	
Water Resources surface water, groundwater, wetlands and floodplains	Long-term beneficial impacts to surface water are expected to occur with implementation of the Proposed Action Alternative by creating new or improving existing wetlands under the FWP. Wetlands benefit surface water by filtering out sediments and other pollutants commonly associated with agriculture and by attenuating and storing water that would otherwise contribute to offsite or "downstream" flooding. Conservation practices benefit water resources by reducing sedimentation and decreasing the amount of nutrients and pesticides that may enter surface or groundwater. The waiver of the AGI limitations for environmentally sensitive lands of special significance granted on a case-by-case basis could expand these benefits to additional agricultural lands. Potential short-term localized adverse impacts to surface water resources may occur from the preparation of the land for installation of the conservation practice and periodic management such	Maximum benefits from wetland restoration and inclusion of buffers under CP27 and CP28 would be the same; however, the specific benefits of enrolling wetlands constructed to receive agricultural drainage, converting aquaculture ponds to wetlands, and adding flooded prairie wetlands would not occur. The potential impacts would be similar to those described for the Proposed Action. The No Action Alternative would be a continuation of CRP as it currently exists. The potential impacts to water resources associated with the No Action Alternative are expected to be similar to those described under the Proposed Action Alternative. Under the No Action Alternative, benefits to water resources that would be achieved by waiving the AGI limitations for lands of special environmental significance would not be realized. No cost share for tree thinning and customary forest management activities, and the forfeiture of annual rental payment for commercial use of the thinning by-products were previously assessed by the 2003 CRP PEIS (USDA FSA 2003).

Table ES-1. Summary of Environmental Consequences (cont'd.)

Resources	Proposed Action (Expansion)	No Action (Current Program)
Water Resources surface water, groundwater, wetland	as tree thinning. BMPs, such as silt fencing and vegetative filter strips, would minimize sediment or other pollutants from affecting surface water quality. Wetlands sited to intercept agricultural drainage would significantly reduce nitrogen loads flowing into downstream surface water bodies such as streams, rivers, and lakes. Constructed wetlands that are built in accordance with NRCS Practice Code 656 specifications ensure their size is appropriate for the catchment area and the outlets are appropriately sized, minimizing potential for low water flows downstream. Low flows could cause desired riparian and aquatic vegetation to die, slow water that may then be favorable for certain invasive plant species to become established, may deplete water quantity needed by terrestrial and aquatic wildlife for survival, and can increase parasitic infestation of fish. In addition, low water flow could increase water temperature and lower oxygen beyond levels needed by aquatic plants and animals, and interrupt stream connectivity. Retiring aquaculture ponds from production and restoration as wetlands would benefit water quality of the pond and eliminate effluent discharge associated with earthen aquaculture facilities. Inclusion of cropped land that was flooded prairie wetland and buffers would benefit surface water quality by taking additional land out of production and this would lessen use of agricultural chemicals and fertilizers that may enter nearby waters. It also would filter out some of the sediments before being deposited in the wetland, thereby extending the life of the wetland. Potential short-term localized adverse impacts to surface water could occur from tree thinning due to increased soil erosion and compaction from ground disturbance and heavy equipment; however, these impacts would be minimized through the implementation of industry standard BMPs. Tree	

Table ES-1. Summary of Environmental Consequences (cont'd.)

Resources	Proposed Action (Expansion)	No Action (Current Program)
Water Resources surface water, groundwater, wetland	thinning maintains the health and vigor of the vegetative stand which diminishes soil erosion that may contribute to sedimentation of surface waterbodies. Long-term beneficial impacts to groundwater could occur with implementation of the Proposed Action Alternative by creating new or improving existing wetlands under the FWP. Wetlands benefit groundwater quality by delaying stormwater runoff and giving it time to infiltrate into the aquifer. Wetlands also sustain vegetation, helping to remove excess nitrogen from runoff, reducing the amount that could contaminate groundwater supplies. Creating new or improving existing wetlands would involve taking agricultural lands out of production, which could increase groundwater storage by reducing groundwater consumption in areas using groundwater for irrigation, and by increasing groundwater recharge. Removing cropland from production would also potentially lessen contamination of groundwater sources from pollutants associated with agriculture. Groundwater withdrawals for aquaculture ponds would also be eliminated if they are converted to natural wetlands. The waiver of the AGI limitations for environmentally sensitive lands of special significance could increase these benefits. Tree thinning has little potential to negatively affect groundwater.	
Soils	Inclusion of new eligible land types and their associated upland buffers in the restoration of farmed or converted wetlands benefits soils by providing vegetative cover that stabilizes soil, thereby reducing erosion, and increases the organic content of soils. This also contributes to carbon sequestration in soils. The waiver of the AGI limitations for environmentally sensitive lands of special significance expands the benefits of taking agricultural lands out of production to additional lands,	FWP would continue to enroll agricultural lands under CP27 and CP28. Conversion of agricultural lands to a wetland and associated vegetative buffer reduces soil erosion and improves the organic content of soils. There are no substantial benefits to soils by the enrollment of wetlands constructed to receive row crop drainage water or aquaculture ponds; therefore, there are no adverse effects on soils if those new categories of eligible lands are not included in the FWP. The benefits to soils from the inclusion of flooded prairie wetlands would not be realized.

Table ES-1. Summary of Environmental Consequences (cont'd.)

Resources	Proposed Action (Expansion)	No Action (Current Program)
Soils	benefiting soils by reducing erosion, increasing their organic content, and contributing to additional carbon sequestration. Tree thinning that ensures the preservation of the conservation cover and improves resource conditions on the land contributes to reducing soil erosion and increasing soil organic content. Short-term localized adverse impacts on soils could result from disturbance while installing conservation covers on environmentally sensitive land of special significance, during construction of wetlands, from installation of constructed and converted wetland buffer conservation covers, and during tree thinning. These activities could increase soil erosion and compaction, however, employing industry standard BMPs for erosion control, soil compaction, and use of vegetative buffers minimizes this potential.	The No Action Alternative would be a continuation of CRP as it currently exists. The potential impacts to soils associated with the No Action Alternative are expected to be similar to those described under the Proposed Action Alternative as agricultural lands would continue to be taken out of production and conservation covers would continue to be installed. However, benefits to soils that would be achieved by waiving the AGI limitations for environmentally sensitive lands of special significance would not be realized. Under the No Action Alternative, tree thinning would continue as an authorized activity and have the same benefits and short-term localized adverse impacts on soil as the Proposed Action.
Socioeconomics	Implementation of the Proposed Action would result in small, positive, or marginal benefits to society. For new AGI limitations and possible waivers for environmentally sensitive lands of special significance, the number of farmers who meet or exceed the enacted AGI cap is small and would not result in adverse socioeconomic effects. Including additional lands that would not otherwise be eligible for CRP into the program extends the benefits of reduced soil erosion, increased water quality, and additional wildlife habitat to society. Wetlands provide an overall net societal benefit associated with improved water quality and increased wildlife habitat. Since the Proposed Action would make construction of wetlands eligible for cost share, there would be no long-term negative impact to farm-level household income or population. Constructing wetlands is an expensive practice to install and may have short-term negative impacts on the participant's household income. However, it is unlikely constructing	Continuation of the CRP as it is currently configured would still require AGI limitations, but not offer waivers for environmentally sensitive lands of special significance. Tree thinning would continue to be authorized, but without cost share, and the annual rental payment would be forfeit on the acreage thinned if the refuse is commercially used. The socioeconomic impacts of the current program have been previously assessed in the 2003 CRP PEIS (USDA FSA 2003). The 2003 CRP PEIS (USDA FSA 2003) did not find a substantial negative effect from the FWP to general society; however, by selecting the No Action Alternative, society would forego the benefits associated with the inclusion of the newly proposed eligible land types.

Table ES-1. Summary of Environmental Consequences (cont'd.)

Resources	Proposed Action (Expansion)	No Action (Current Program)
Socioeconomics	wetlands would be undertaken by someone who could not afford it. The practice of using wetlands for the water quality functions they provide would create an overall net societal benefit associated with increased water quality and wildlife habitat. As such, inclusion of these acres would provide long-term positive socioeconomic benefits. Economic and non-economic positive net benefits would be derived from tree thinning through cost sharing, excluding the costs of associated infrastructure to remove the forest refuse derived from management activities. The inclusion of flooded prairie wetlands would be a small amount of acreage throughout the applicable region; therefore, it would have little socioeconomic effect. Individual producers are not likely to choose to enroll their aquaculture ponds into the FWP program unless the return from the annual rental rate is essentially equal to or greater than the return from producing the aquaculture products. Therefore, only marginally productive ponds are likely to be converted or a non-economic incentive exists.	
Other Protected Resources	Positive long-term benefits to other protected lands would be expected to result from this action. Wetland construction or restoration would positively affect adjacent natural lands set aside for conservation, research, or recreation by complementing and enhancing their missions. Long-term beneficial impacts to other protected resources are expected to occur from allowing enrollment of environmentally sensitive land of special significance when AGI limitations are waived. The benefits are derived by providing wildlife habitat that otherwise would not exist or by improving such habitat, increasing water quality through reducing sedimentation and pollution from agriculture, and enhancing these protected lands by providing an additional buffer from more	Payment reductions for commercial use of tree thinning would continue consistent with current CRP policy; therefore, no cost share for tree thinning would be offered and no impact to other protected resources would occur. Continuation of the CRP as it is currently configured would still require AGI limitations but not offer waivers for environmentally sensitive lands of special significance. This would not have a negative impact on other protected resources, but the benefits of including these types of lands in CRP would not extend to other protected resources. No negative impacts to other protected lands would be expected to result from not including the new eligible land types in the FWP. Continuation of FWP as configured would still offer benefits of installing CP27 and CP 28 adjacent to other protected resources.

Table ES-1. Summary of Environmental Consequences (cont'd.)

Resources	Proposed Action (Expansion)	No Action (Current Program)
Other Protected Resources	incompatible land uses. Tree thinning that improves the health of the vegetative stand and other resources on the land benefits other protected resources by reducing the potential for soil erosion that could affect water quality, and maintaining habitat for wildlife. Employment of BMPs that reduce soil erosion and control runoff would minimize the potential for adversely affecting adjacent lands during installation and management of conservation covers. Short-term, temporary localized negative impacts to other protected resources could occur from noise produced by machinery used to prepare land for installing the conservation cover, the construction of wetlands, and their subsequent periodic management including tree thinning. The disturbance from machinery would not be greater than that from the No Action Alternative, nor from machinery used on actively farmed lands. Providing cost share for tree thinning would not have impacts on other protected resources.	

This Page Intentionally Blank

TABLE OF CONTENTS

Page

FIGURES

Page

TABLES

Page

This Page Intentionally Blank

ACRONYMS AND ABBREVIATIONS

AGI	Adjusted Gross Income
ARMS	Agricultural Resource Management Survey
BMP	Best Management Practice
CCC	Commodity Credit Corporation
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CP	Conservation Practice
CPA	Conservation Priority Area
CRIA	Civil Rights Impact Analysis
CRP	Conservation Reserve Program
CWA	Clean Water Act
EI	Erodibility Index
EO	Executive Order
EPA	Environmental Protection Agency
ERS	Economic Research Service
ESA	Endangered Species Act
2002 Farm Bill	Farm Security and Rural Investment Act of 2002
2008 Farm Bill	Food, Conservation, and Energy Act of 2008
FEMA	Federal Emergency Management Agency
FPPA	Farmland Protection Policy Act
FSA	Farm Service Agency
FWP	Farmable Wetlands Program
HEL	Highly Erodible Lands
MOU	Memorandum of Understanding
NASS	National Agriculture Statistics Service
NEPA	National Environmental Policy Act
NPS	Nonpoint Source
NRCS	Natural Resources Conservation Service
NWP	Nationwide Permit
PEA	Programmatic Environmental Assessment
PEIS	Programmatic Environmental Impact Statement
PPR	Prairie Pothole Region
PIP	Practice Incentive Payment
RUSLE	Revised Universal Soil Loss Equation
SIP	Signing Incentive Payment

SSA	Sole Source Aquifer
TSP	Technical Service Provider
UMES	University of Minnesota Extension Service
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service
USGS	U.S. Geological Survey

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 BACKGROUND

The United States Department of Agriculture (USDA) Commodity Credit Corporation (CCC) proposes to implement certain changes to the Conservation Reserve Program (CRP) reauthorized with new Title II provisions enacted by the Food, Conservation, and Energy Act of 2008 (2008 Farm Bill). These changes include modification to the Farmable Wetlands Program (FWP) under CRP, Tree Thinning, and Adjusted Gross Income (AGI) provisions pertaining to CRP. USDA Farm Service Agency (FSA) administers the CRP on behalf of the CCC. This Programmatic Environmental Assessment (PEA) is being prepared by FSA to examine the potential environmental consequences associated with implementation of the certain changed provisions in the 2008 Farm Bill, and provide decision makers information to develop new regulations. In 2003, a Programmatic Environmental Impact Statement (PEIS) for the reauthorization of the CRP in Title II of the Farm Security and Rural Investment Act of 2002 (2002 Farm Bill) was completed (USDA FSA 2003) and a Record of Decision published; therefore, only those aspects of the CRP not addressed in the PEIS are evaluated in this PEA.

1.1.1 The Existing Conservation Reserve Program

On behalf of the CCC, the USDA FSA administers the CRP, the federal government's largest private land environmental improvement program. Initiated by the Food Security Act of 1985, CRP is a voluntary program that supports the implementation of long-term conservation measures designed to improve the quality of ground and surface waters, control soil erosion, and enhance wildlife habitat on environmentally sensitive agricultural land. In return, CCC provides participants with rental payments and cost-share assistance under contracts that extend from 10 to 15 years. The program is governed by regulations published in Title 7, Code of Federal Regulations (CFR) Part 1410. Technical support functions are provided by:

- USDA's Natural Resources Conservation Service (NRCS)
- USDA's Cooperative State Research, Education, and Extension Service
- United States Forest Service (USFS)
- State forestry agencies
- Local soil and water conservation districts
- Other non-Federal providers of technical assistance

Producers can enroll in the CRP using one of two procedures: (1) offer lands for general CRP sign-up enrollment only during specific sign-up periods and compete with other offers based upon the environmental benefits index (EBI), and (2) enroll environmentally desirable land, including farmable wetlands, to be devoted to certain conservation practices under CRP continuous sign-up provisions, if certain eligibility requirements are met or if a State and county are involved in a Conservation Reserve Enhancement Program (CREP) and the land qualifies.

Eligible producers must have owned or operated the land offered for enrollment at least 12 months prior to close of the CRP sign-up period, with certain exceptions. Eligible land must be

cropland that is planted or considered planted to an agricultural commodity four of the previous six years from 1996 to 2001 and which is physically and legally capable of being planted in a normal manner to an agricultural commodity. Additionally, the offered cropland must meet one of the following criteria:

- Cropland for a field or a portion of a field where the weighted average Erodibility Index (EI) for the three predominant soils on the acreage offered is eight or greater;
- Land currently enrolled in CRP scheduled to expire September 30 of the fiscal year the acreage is offered for enrollment;
- Infeasible to farm crops; or
- Cropland located within a National- or State-designated Conservation Priority Area (CPA).

The CRP general signup offers are ranked according to the Environmental Benefits Index (EBI). Each eligible offer is ranked in comparison to all other offers and selections made from that ranking. The EBI ranks offers according to wildlife habitat, water quality, reduced soil erosion, air quality from reduced wind erosion, along with costs to implement the conservation practices, and their benefits likely to endure beyond the contract period.

Environmentally desirable land, including farmable wetlands, devoted to certain conservation practices may be enrolled in CRP at any time under continuous sign-up. Offers are automatically accepted provided the land and producer meet certain eligibility requirements. Offers for continuous sign-up are not subject to competition. Continuous sign-up contracts are 10 to 15 years in duration.

A specific CREP project begins when a State, Indian tribe, local government, or local nongovernment entity identifies an agriculture-related environmental issue of State or national significance. These parties and FSA (on behalf of the CCC) then develop a CREP Agreement to address particular environmental issues and goals. Enrollment in a State CREP is limited to specific geographic areas and practices, may have acreage targets for enrollment under certain practices, and additional non-federal sponsored enrollment incentives.

FSA provides CRP participants with annual rental payments and cost share assistance for establishing the resource conserving vegetative cover. FSA bases the rental payments on the relative productivity of the soils within each county and the average dryland cash rent or its equivalent. Maximum CRP rental rates are determined prior to enrollment. An offerer may request a lower rate to increase the competitiveness of their offer. Maintenance payments up to seven dollars per-acre, per-year may be made as incentives to perform certain tasks and other incentives, up to 20 percent of the annual payment, may be provided for certain continuous sign-up practices. No more than 50 percent of the cost of establishing a conservation cover on eligible cropland may be paid by FSA for an approved practice. These payments are referred to as Signing Incentive Payments (SIPs) and Practice Incentive Payments (PIPs).

1.1.2 The Existing Farmable Wetlands Program

The FWP is a part of the CRP that supports the restoration of wetland functions and values to land that has been impacted by farming activities. Restoring wetlands reduces downstream flood damage, improves surface and groundwater quality, and recharges groundwater supplies. Wetlands provide vital habitat for migratory birds and many wildlife species, including threatened and endangered species, and provide recreational opportunities such as bird watching and hunting.

The FWP started as a pilot program established by the 2001 Agricultural Appropriations act. Where farmed, small wetland acres were made eligible to be enrolled through a continuous sign-up process. The wetlands and associated buffers enrolled were limited to a total of 500,000 acres in six States: Iowa, Minnesota, Montana, Nebraska, North Dakota, and South Dakota, with no more than 150,000 acres being enrolled in any single State (USDA FSA 2003) (Figure 1.1-1). The 2002 Farm Bill expanded the FWP to allow continuous sign-up in all States for a national maximum of 1 million acres. Specific allocations were made to each State, with no more than 100,000 acres allowed to be enrolled in any one State. State allocations are provided in Appendix A. In addition to the State allocations, the overall CRP is restricted from enrolling more than 25 percent of the cropland in a county except under special provisions (USDA FSA 2006).

Under the FWP, landowners enroll on a continuous sign-up basis in long-term contracts (10 to 15 years) to take eligible lands out of agricultural production and restore the land's hydrology and vegetation. Eligible wetlands are suitably located and adapted to the restoration of wetland functions and values. Cropped or prior converted wetland, or land in a floodplain, that is identified on the Final National Wetland Inventory Map or a 1:24,000-scale U.S. Geological Survey (USGS) map, if not on the Final Wetland Inventory Map, is ineligible for the FWP. In return for enrollment, FSA provides annual rental payments, incentive payments, and cost-share for installing approved practices. Once eligible lands are identified, site-specific environmental reviews and compliance with applicable environmental laws is completed in accordance with 7 CFR 799, and procedures established in the FSA Handbook on Environmental Quality Programs for State and County Offices (USDA FSA 2008a).

For farmable wetland acreage to be enrolled in the FWP, under the current regulation it must meet the following general eligibility requirements:

- Land must be physically and legally capable of being cropped in a normal manner to an agricultural commodity during a normal season.
- Land must have been planted to an agricultural commodity during three of the last 10 years.
- A wetland must be 10 acres or less, and only the first five acres may receive payment.
- An upland buffer up to three times the wetland acreage, or an average of 150 feet on either side of the wetland, may be enrolled to protect the wetland.
- The landowner must restore the hydrology of the wetland to the maximum extent possible.

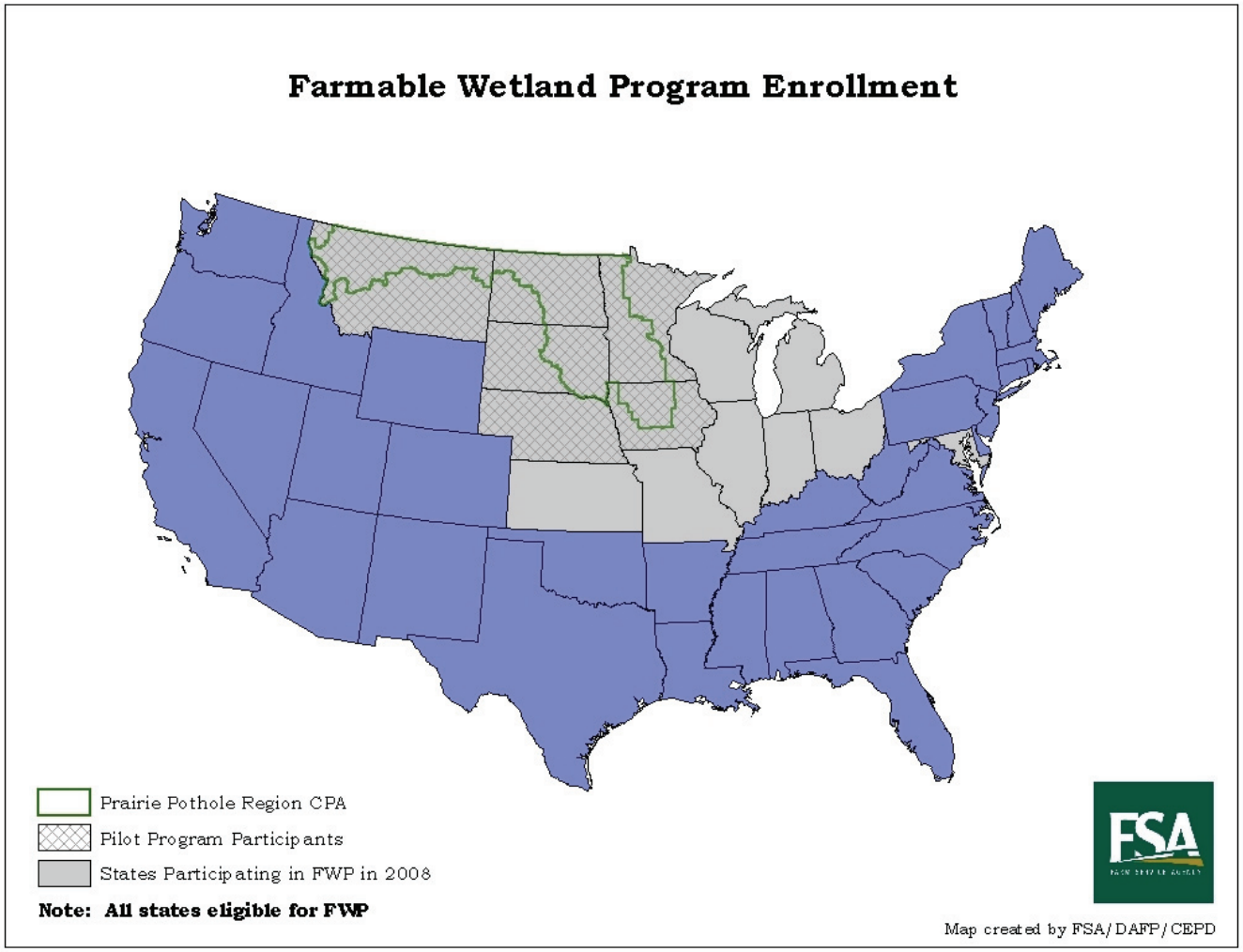


Figure 1.1-1. Farmable Wetland Program Enrollment.

- Cropped or prior converted wetland, or land in a floodplain, that is identified on the Final National Wetland Inventory Map or a 1:24,000-scale USGS map, if not on the Final Wetland Inventory Map, is ineligible for the FWP.

Each landowner is limited to 40 acres of wetland and buffer per tract. A tract is defined as contiguous land under one ownership and operated as a farm or part of a farm. A farm is made up of tracts that have the same owner and operator. Multiple wetlands and associated buffers on a tract may be enrolled as long as the total acreage does not exceed 40 acres. Land permanently under water is ineligible to be enrolled in the FWP.

The conservation practices (CP) authorized under the FWP are CP27, Farmable Wetlands Pilot Wetland, and CP28, Farmable Wetlands Pilot Buffer. CP27 restores the function and value of wetlands devoted to agricultural use. It also requires that cropland meet the cropping history requirement and an associated buffer (CP28) be offered for enrollment as well. The NRCS or Technical Service Provider (TSP) determines whether the cropped or prior converted wetland, or land in a floodplain is identified on the Final National Wetland Inventory Map or a 1:24,000-scale U.S. Geological Survey topographic map. Any land identified as a converted wetland, a wetland or within a floodplain on these maps is not eligible for enrollment in CRP under the FWP.

CP28 is for Farmable Wetlands Pilot Buffer, a practice to provide a vegetative buffer around wetlands (CP27) to remove sediment, excess nutrients, and pollutants from impacting the wetland, and wildlife habitat for the associated wetland. The minimum acceptable width for the associated buffer is 30 feet surrounding the wetland. CP28 may not exceed the larger of a maximum average width of 150 feet surrounding the wetland, or three times the size of the wetland.

Table 1.1-1 provides the current FWP enrollment by State (USDA FSA 2008b). Currently, 14 States participate in the FWP with a total enrollment of 182,125 acres (Figure 1.1-1). For comparison, the number of acres enrolled in the entire CRP is listed for each State. The total acreage enrolled in the FWP is roughly 0.5 percent of the total acreage enrolled in the entire CRP.

1.1.3 Regulatory Compliance

This PEA is prepared to satisfy the requirements of the National Environmental Policy Act (NEPA; Public Law 91-190, 42 U.S. Code [USC] 4321 et seq.); implementing regulations adopted by the Council on Environmental Quality (CEQ; 40 CFR 1500-1508); and FSA implementing regulations, Environmental Quality and Related Environmental Concerns – Compliance with NEPA (7 CFR 799). The intent of NEPA is to protect, restore, and enhance the human environment through well-informed Federal decisions. A variety of laws, regulations, and Executive Orders apply to actions undertaken by Federal agencies and form the basis of the analysis presented in this PEA.

Table 1.1-1. Farmable Wetland Program Enrollment by State[1] as of May 2008.

State	Farmable Wetland Program			Total CRP
	No. of Contracts	No. of Farms	No. of Acres	No. of Acres
Illinois	34	33	320	1,063,363
Indiana	88	78	933	295,732
Iowa	4,610	3,686	73,406	1,816,033
Kansas	70	65	1,005	3,124,350
Maryland	1	1	5	83,443
Michigan	7	7	51	260,411
Minnesota	2,903	2,477	39,749	1,779,316
Missouri	1	1	9	1,457,715
Montana	14	6	140	3,299,240
Nebraska	446	389	3,876	1,237,283
North Dakota	908	641	18,245	2,998,506
Ohio	23	24	196	345,561
South Dakota	2,593	1,922	44,145	1,331,152
Wisconsin	6	6	43	527,608
Total U.S.	**11,704**	**9,336**	**182,125**	**34,714,073[2]**

[1] Only those States with land enrolled in the FWP in May 2008 are listed
[2] Total acreage in the U.S., not just the 14 States that have land enrolled in the FWP

1.2 PURPOSE AND NEED

The purpose of the Proposed Action is to promulgate regulations to implement certain applicable changes to the CRP as provided for in the 2008 Farm Bill. The need for the Proposed Action is to fulfill FSA responsibility to administer certain conservation provisions of the 2008 Farm Bill. This legislation was passed into law on June 18, 2008.

1.3 ORGANIZATION OF THE PEA

This PEA assesses the potential impacts of the Proposed Action and Alternatives, including the No Action Alternative, on potentially affected environmental and socioeconomic resources. Chapter 1 provides background information relevant to the Proposed Action, and discusses its purpose and need. Chapter 2 describes the Proposed Action and Alternatives. Chapter 3 describes the baseline conditions (i.e., the conditions against which potential impacts of the Proposed Action and Alternatives are measured) for each of the potentially affected resources. Chapter 4 describes potential environmental consequences on these resources. Chapter 5 describes potential cumulative impacts and irreversible and irretrievable resource commitments. Chapter 6 discusses mitigation measures utilized to reduce or eliminate impacts to protected resources. Chapter 7 lists the preparers of this document. Chapter 8 contains a list of the persons and agencies contacted during the preparation of this document and Chapter 9 contains references.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 PROPOSED ACTION

The FSA proposes to implement certain changes to the CRP enacted by the 2008 Farm Bill. Table 2.1-1 summarizes selected components of the existing CRP provisions and the changed provisions under Title II of the 2008 Farm Bill assessed in this PEA. Additionally, proposed changes to FWP provisions are presented in Table 2.1-2. The Proposed Action also includes the implementation of new CPs that would be developed for conversion of the new categories of lands eligible for enrollment in the FWP.

Table 2.1-1. Summary of Selected Components of the Existing CRP and Certain Changes Enacted by the 2008 Farm Bill

	Current CRP	2008 Farm Bill Provisions
Section 1604 of the 2002 Farm Bill and Section 1001D of the 1985 Farm Bill—Adjusted Gross Income Qualification	An individual or entity is not eligible to receive benefits under CRP, during a crop year, if their average adjusted gross income (AGI) exceeds $2.5 million, and less than 75 percent of the average AGI of the individual or entity is derived from farming, ranching, or forestry operations.	An individual or legal entity is not eligible to receive any benefit under CRP if their average adjusted non-farm gross income exceeds $1,000,000 and less than 66.66 percent of the average AGI of the individual or legal entity is average adjusted farm income. Waivers may be authorized if the environmentally sensitive land to be protected is of special significance.
Section 1231B 1985 Farm Bill	Limited enrollment in this pilot program to total of 1 million acres (part of overall CRP acreage cap) and to 100,000 acres in any 1 State. State limits could be increased to 150,000 acres following review of enrollment by Secretary. As of April 2008, 180,000 acres were enrolled. Limited eligibility to land that was cropped during at least 3 of immediately preceding 10 crop years, and contiguous buffer acreage used to protect the wetland.	Extends program through FY 2012. Upon review, maximum acreage/State may be increased to 200,000 acres. Expands land eligibility to include: • land on which constructed wetland is to be developed that will receive flow from row-crop agriculture drainage system and is designed to provide nitrogen removal in addition to other wetland functions • land that was devoted to commercial pond-raised aquaculture in any year during calendar years 2002-2007

Table 2.1-1. Summary of Selected Components of the Existing CRP and Certain Changes Enacted by the 2008 Farm Bill (cont'd.)

	Current CRP	2008 Farm Bill Provisions
Section 1231B 1985 Farm Bill		• intermittently flooded land provided land had cropping history in 3 years between 1990 and 2002 and was subject to natural overflow of prairie wetland • expands buffer acreage to include land that enhances wildlife benefits (in terms of appropriate mix of upland and wetland, as determined by USDA)
	Wetland acres were to be enrolled through continuous signup similar to that for other high-priority conservation practices. Payments were commensurate with those provided to landowners who enroll filter strips in CRP continuous signup.	Retains provision.
	On single tract of land, limited enrollment to 10 contiguous wetland acres and 30 acres of contiguous buffer	Sets maximum of 40 contiguous acres/tract. However, "flooded prairie wetlands" (that meets 1990-2002 cropping history test) has 20-acre wetland limit. Participants must refrain from commercial use of the land (restated participant duty applicable to all CRP). There is no size limit for aquaculture.
Section 2109 of both the 1985 and 2002 Farm Bills—Cost Sharing Relating to Trees, Windbreaks, Shelterbelts, and Wildlife Corridors	Current cost share is 50 percent of the reasonable and necessary management costs incurred by the owner/operator for trees and shrubs up to $50 per acre per year not to exceed: • $100 per acre for the life of the contract for a 10-year contract • $125 per acre for the life of the contract for a contract in excess of 10 years.	This provision expands upon all the current CRP to add enacted cost share of up to 50 percent of the costs of tree thinning in addition to other forest management activities. Payments will be made for a period no less than 2 years but not more than 4 years from the date of the planting of the trees or shrubs and/or the thinning of an existing stand. Applies to tree practices, and windbreaks, shelterbelts, riparian buffers and wildlife corridors.

Table 2.1.1. Summary of Selected Components of the Existing CRP and Certain Changes Enacted by the 2008 Farm Bill (cont'd.)

	Current CRP	2008 Farm Bill Provisions
Section 2109 of both the 1985 and 2002 Farm Bills—Cost Sharing Relating to Trees, Windbreaks, Shelterbelts, and Wildlife Corridor	CRP participant may make commercial use of forest refuse resulting from customary forestry activities only if they forego the annual rental payment for the affected acreage in the year the forestry activity is conducted, if the area is protected from erosion, and forest refuse is removed from CRP acreage to enhance wildlife habitat, and reduce disease and insect infestations.	

Table 2.1-2. Summary of the Components of the Farmable Wetlands Program and Certain 2008 Farm Bill Amendments (Section 2106)

	Current FWP	FWP Amended by 2008 Farm Bill
Acreage	No more than 1 million acres	No change
State allotment	No more than 100,000 acres	Can be up to 200,000 acres
Eligible Land	• Land must be cropland planted to an agricultural commodity in 3 of the last 10 most recent crop years and be physically and legally capable of being planted in a normal manner to an agricultural commodity. • Wetland must be 10 acres or less. Only the first 5 acres may receive payment. • The buffer may not exceed the greater of three times the size of the wetland or an average of 150 feet around the wetland. • Cropped or prior converted wetland, or land in a floodplain, is not eligible for enrollment.[1]	FWP Changes: • Land on which a constructed wetland is to be developed to receive flow from a row crop agricultural drainage system designed to provide nitrogen removal and other wetland functions. • Land that was devoted to commercial pond-raised aquaculture in any year during 2002 through 2007. • Land that after January 1, 1990, and before December 31, 2002, was cropped during at least three of the 10 crop years and was subject to the overflow of a prairie wetland.
Enrollment Parameters	Maximum enrollment is 10 acres of wetland and 30 acres of buffer per tract.	• 40 acres per tract for wetlands or constructed wetlands • 20 acres for flooded prairie wetland and buffers not to exceed 40 acres • No size limit for aquaculture

Table 2.1-2. Summary of the Components of the Farmable Wetlands Program and Certain 2008 Farm Bill Amendments (Section 2106) (cont'd.)

	Current FWP	FWP Amended by 2008 Farm Bill
Conservation Practices	CPs authorized under FWP are: • CP27—Farmable Wetlands Pilot Wetland • CP28—Farmable Wetland Pilot Buffer	Current FWP eligible land plus: • Constructed wetlands • Pond-raised aquaculture • Flooded prairie wetland
Contract Duration	10 to 15 years	No change.
Payments	Eligible producers may receive the following payments: • Annual rental payments based on the weighted average dryland cash rent for a maximum of 5 wetland acres and buffer. • Signing incentive payment of $100 to $150 per acre depending on contract length. • Practice incentive costs equal to 40 percent of the eligible costs of installing the practice. • Incentive amount equal to 20 percent of the weighted average dryland cash rent. • Up to 50 percent cost-share for establishing permanent cover and management as specified in the conservation plan.	Five acre limit on annual rental payments removed. No change.

[1] To be ineligible, the cropped or prior converted wetland, or land in a floodplain, needs to be identified on the Final National Wetland Inventory Map or a 1:24,000-scale USGS map, if not on the Final Wetland Inventory Map.

2.2 SCOPING

Scoping is a process used to identify the scope and significance of issues related to a Proposed Action in developing alternatives and identifying issues to be analyzed in this PEA. The FSA has held several meetings and coordinated by telephone and email with USDA staff from the national, State, and county level FSA offices and NRCS, as well as with the U.S Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (USFWS), USFS, USDA Economic Research Service (ERS), and National Oceanic Atmospheric Administration. These parties identified issues associated with the changes to CRP provisions in the 2008 Farm Bill that require consideration under NEPA as well as the administrative tasks needed.

2.3 RESOURCES ELIMINATED FROM ANALYSIS

CEQ regulations (§1501.7) indicate that the lead agency shall identify and eliminate, from detailed study, the issues which are not important or which have been covered by prior environmental review, narrowing the discussion of these issues in the document to a brief

presentation of why they would not have a dramatic effect on the human or natural environment. Issues eliminated from detailed analysis in this PEA include:

Noise—Implementing the Proposed Action would not permanently increase ambient noise levels at or adjacent to the project area. Noise from heavy equipment is common on agricultural lands that could be enrolled in the CRP. The potential for increased noise levels associated with implementing CPs would be minor, temporary, localized, and would cease once implementation of the approved CPs was completed.

Environmental Justice—EO 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations was issued by President Clinton in 1994. The potential impacts of CRP to environmental justice were evaluated in the 2003 CRP PEIS (USDA FSA 2003) and were re-evaluated during the Civil Rights Impact Analysis (CRIA) completed during the preliminary rule-making process. Expanding selected eligibility provisions of the CRP to include the types of land described above does not introduce new impacts to environmental justice populations. Revising the AGI eligibility requirements to a cap of $1,000,000 and requiring at least 66.66 percent of average adjusted farm income to qualify for CRP does not have the potential to disproportionately impact low income or minority populations. Therefore, environmental justice has been eliminated from analysis in this PEA.

Air Quality—The Proposed Action is not expected to impact either local or regional air quality. Temporary minor impacts to local air quality as a result of soil disturbance during installation of conservation practices would not differ measurably from those resulting from continued use of the land for agriculture, would not exceed ambient air quality standards, and would not violate State Implementation Plans.

Cultural Resources—This PEA does not address specific locations to be enrolled in the CRP at this time; therefore, specific cultural resources are not analyzed in this PEA. As with all CRP land enrollment, site-specific environmental evaluations would be conducted prior to approval of any CRP contracts during the conservation planning process. The likely impact of expanded CRP enrollment on cultural resources would not be greater than normal agricultural practice since the lands eligible for the program are required to have been planted or considered planted to an agricultural commodity during three of the last 10 years.

Traffic and Transportation—The Proposed Action has little potential to impact transportation on a local, regional, State, or national level. The lands eligible for enrollment in the CRP are predominately rural in character and widely dispersed, having little if any effect on traffic or infrastructure; therefore, transportation has been eliminated from further analysis.

Prime and Unique Farmland—Lands eligible for enrollment in the CRP are highly erodible or are marginal pastureland, which does not meet the definition of Prime and Unique Farmland as defined by the Farmland Protection Policy Act of 1981 (FPPA), and is therefore eliminated from further analysis.

Human Health & Safety—Constructed wetland participants are required to develop an operation and maintenance plan that includes mandatory requirements for safety, water management,

cleanout of sediment, maintenance of structures, embankments, and vegetation, control measures for vectors and pests, and containment of potential pollutants during maintenance operations (USDA NRCS 2008a). In addition, aquaculture ponds that are converted under the FWP would be required to have safety features in place to assist people who fall in the ponds and devices to help prevent such accidents (USDA NRCS 2003). Human health and safety has been eliminated from further analysis.

Coastal Zone Management and Coastal Barrier Resources—Expanding CRP eligibility to include the types of land described in this PEA has little potential to induce growth that adversely impacts water and open space protected in coastal zone management plans. Coastal barrier lands protected under the Coastal Barrier Resources Act of 1982 (as amended) are undeveloped and do not meet the CRP eligibility requirement for crop history; therefore, these resources are also eliminated from further analysis.

2.4 ALTERNATIVES SELECTED FOR ANALYSIS

2.4.1 Proposed Action Alternative

The 2008 Farm Bill amended the 1985 Act and made a number of changes to the CRP. Certain of those changes, taken in context with the 1985 Act, are mandatory in context. Therefore, the following mandatory provisions are evaluated in this PEA and include modifications to the Farmable Wetlands Program, tree thinning, and the conservation exception to the Average Adjusted Gross Income provision. Other CRP provisions will be subject to an Environmental Impact Statement that shall be completed at a later date and will not be implemented until such time.

Under the Proposed Action Alternative, modifications to the FWP made in the 2008 Farm Bill would be fully implemented and include constructed wetlands associated with drained row crop agriculture, lands used for aquaculture, and flooded prairie wetlands would be added to the farmable wetland types eligible for enrollment in the FWP. The total amount of acreage that can be enrolled in the FWP would remain at 1 million acres nationally. The maximum size of a wetland, amount of acres that can be enrolled per tract increases, new payment provisions, and new practice and maintenance requirements are required.

2.4.2 No Action Alternative

Under the No Action Alternative, the current CRP provisions would continue unmodified. This alternative would maintain the current adjusted income limitations for eligibility and would not make cost sharing for tree thinning available to producers. The impacts of the current CRP were assessed in a PEIS in 2003 and are discussed in this PEA in order to provide a baseline against which the impacts of the Proposed Action can be assessed.

Under the No Action Alternative, the current FWP would remain in place; however, constructed wetlands, lands used for aquaculture, and flooded prairie wetlands would not be eligible for the FWP. The impacts of the FWP, as currently implemented, were analyzed in the 2003 PEIS for the CRP (USDA FSA 2003); hence, only those impacts not previously analyzed are addressed in this

PEA. The current FWP provisions identified in this PEA are discussed as the No Action Alternative in order to provide a baseline against which the impacts of the Proposed Action can be assessed.

This Page Intentionally Blank

3.0 AFFECTED ENVIRONMENT

3.1 LANDS AFFECTED BY THE PROPOSED ACTION

This PEA focuses descriptions of the affected environment on the proposed expansion of CRP to certain eligible lands that are:

- Determined to be of special environmental significance;
- Areas where row crop agricultural drainage systems would be used;
- Areas that support commercial pond-raised aquaculture;
- Areas with flooded prairie wetlands; and
- Planted with trees and/or windbreaks, shelterbelts, riparian buffers, and wildlife corridor conservation covers.

This PEA analyzes the impacts of the selected provisions of the 2008 Farm Bill on these land types. Impacts of CRP on all other agricultural land types within the U.S. were assessed in the 2003 CRP PEIS (USDA FSA 2003). The types of activities authorized by the selective new provisions of the 2008 Farm Bill on the above lands assessed in this PEA are described below.

3.1.1 Environmentally Sensitive Lands of Special Significance Related to Adjusted Gross Income Waiver

The 2008 Farm Bill enables USDA to waive AGI limitations on a case-by-case basis if it is determined that the lands offered for enrollment are environmentally sensitive and of special significance. Environmentally sensitive land determined to be of "special significance" would be evaluated by a multi-disciplinary team on a case-by-case basis to determine if that land would qualify for an AGI waiver. The potentially affected lands would have critical soil erosion, wildlife (including protected species), or water quality issues substantially addressed by CRP. As such, these lands would potentially be enrolled under any of the CPs included in the program, and could be located anywhere within the continental U.S. or its territories. A list of the all of the CPs is presented in Appendix B.

3.1.2 Row Crop Agricultural Drainage Systems (Constructed Wetlands)

Many soils in the Upper Midwest, as well as soils in other regions of the U.S. and the world, have poor natural drainage and stay waterlogged for several days after excess rain. This prolonged wetness prevents timely fieldwork and causes stress on growing crops because saturated soils do not provide sufficient aeration for crop root development. Agricultural drainage is the use of surface ditches, subsurface permeable pipes, or both, to remove standing or excess water from poorly drained lands. During the late 1800s, European settlers in the Upper Midwest began making drainage ditches and channelizing (straightening and reshaping) streams to carry water from the wet areas of their farms to nearby streams and rivers. Later, farmers increased drainage by installing subsurface drainage pipes generally at a depth of three to six feet. When installing a subsurface drainage system, pipes are either strategically placed in a field to remove water from isolated wet areas or installed in a pattern to drain an entire field. In some areas, surface inlets or

intakes (risers extended from underground pipes to the surface) remove excess surface water from low spots in fields (University of Minnesota Extension Service [UMES] 2002).

Draining wet fields allows fields to warm up faster and be planted earlier, provides better aeration to plant roots, and reduces problems with denitrification. Denitrification is the process of reducing oxidized forms of nitrogen available for plant uptake into gaseous nitrogen, which is far less accessible for plant growth. Subsurface drainage can also decrease surface runoff, thereby reducing sediment losses by 16 to 65 percent and phosphorus losses by up to 45 percent (Zucker and Brown 1998). The main water quality concern about subsurface drainage is the increased loss of nitrates and other soluble constituents that can move through soil to drainage systems and end up in nearby surface water. Agricultural drainage is one of the primary sources of nonpoint source pollution (NPS) in the nation's water supplies. In recent years, NPS has added a significant excess nutrient (nitrogen and phosphorus) load to the Mississippi River drainage basin and, because of these nutrients, the northern Gulf of Mexico has developed a chronic hypoxic area where there is insufficient oxygen in the water for fish and other sea life (Crumpton *et al*. 2006).

There is now increasing interest in the use of natural and constructed wetlands to manage drainage water and remove the nitrogen before it reaches surface water bodies. According to NRCS Technical Standard 656, constructed wetlands are artificial ecosystems with hydrophytic vegetation designed for water treatment. Wetlands are particularly effective for removing sediment, nitrogen and phosphorus from agricultural drainage. Plant, soil and hydrologic parameters interact in a complex way to filter and trap pollutants, and to recycle nutrients. Certain tree and plant species have the potential to absorb pollutants. Residence time, flow rate, hydraulic roughness and wetland size and shape are some of the factors which influence treatment efficiency. A USDA/University of Iowa study on the nitrate removal benefits of using wetlands to filter agricultural drainage in the Upper Mississippi River and Ohio River basins found that wetlands could be expected to remove an estimated 40 to 60 percent of the nitrate load where the wetland is two percent the size of the watershed it collects drainage from (Crumpton *et al*. 2006). Higher reductions could be achieved if nitrate loading was greater than modeled in the study.

3.1.3 Commercial Pond-raised Aquaculture

Aquaculture is defined as the production of aquatic animals and plants under controlled conditions for all or part of their lifecycle (USDA ERS 2008). U.S. aquacultural production is composed of the production of food-fish, ornamental fish, baitfish, mollusks, crustaceans, aquatic plants and algae, and some reptiles such as alligators and turtles. These organisms are grown in a wide variety of climates in either fresh or salt water and utilize a number of different production systems.

The 2005 Census of Aquaculture (USDA National Agricultural Statistics Service [NASS] 2006) reported farm-level sales of $1.1 billion. Approximately 280,000 acres of ponds were used for aquaculture. The five States with the largest acreage in pond-raised aquaculture were Mississippi, Arkansas, Minnesota, Louisiana, and Alabama (Table 3.1-1).

Table 3.1-1. Top Ten States for Acres in Aquaculture Ponds in 2005.

Location	Total Farms	Farms with Ponds	Number of Ponds	Average Acres per Pond	Total Acres in Ponds
U.S.	4,309	2,347	48,003	5.8	279,975
Mississippi	403	401	9,963	10.2	101,397
Arkansas	211	207	6,756	9.0	60,567
Minnesota	77	71	1,670	24.3	40,625
Louisiana	873	293	2,312	11.3	26,211
Alabama	215	209	3,632	6.8	24,805
Texas	95	61	699	4.7	3,293
North Carolina	186	97	833	3.9	3,222
California	118	75	1,306	2.2	2,829
Missouri	35	28	1,015	2.6	2,617
Florida	359	166	10,437	0.2	2,031

The catfish industry is the largest sector in U.S. aquaculture, accounting for more than 40 percent of all sales. Catfish are grown in open freshwater ponds. Other major food-fish species grown in the U.S. are trout, salmon, tilapia, hybrid striped bass, sturgeon, walleye, and yellow perch. With the exception of salmon, these fish are normally grown in open freshwater production systems. Nonfood species are baitfish and ornamental fish. Bait fishes are produced in freshwater ponds, with Arkansas being the largest producer (USDA ERS 2008). Ornamental fish production covers a large number of species and a variety of growing environments, including fresh, salt, cold, and warm water.

3.1.4 Flooded Prairie Wetlands

The prairie pothole region (PPR) of North America contains millions of glacially formed depression-like wetlands embedded in a landscape matrix of naturally flat, open grasslands and agriculture in the central U.S. (Gleason *et al.* 2008). The PPR is shown in Figure 1.1-1. The basins are roughly round or oval in shape, although it is fairly common to encounter some with relatively convoluted shorelines.

During the period from the late 1700s to the mid-1980s, an estimated 53 percent of the original wetlands in the U.S. were lost to agriculture, industry, urbanization and other human activities (Mitsch and Gosselink 1993). Wetlands were drained and cultivated throughout the U.S., most significantly in the Midwest for grain production. Large numbers of wetlands in the PPR were among those drained for cultivation. With the 1985 Farm Bill, the government reversed its policy on wetland drainage and encouraged preservation through CRP and other programs. In 1997, the Secretary of Agriculture added the PPR to the National Conservation Priority Areas (CPAs) for the CRP. CPA designations are based on a judgment that retiring agricultural lands in these

specific areas offers the potential for significant water quality or wildlife habitat benefits. Enrolling these lands helps achieve objectives of other Federal or State environmental laws (USDA 1997).

The FWP started as a pilot program in 2001 that allowed wetlands with a cropping history in the last 10 years to become eligible to be enrolled in the CRP through a continuous sign-up. The six States that were in the pilot program of the FWP are all part of the PPR (Figure 1.1-1). Iowa, South Dakota, Minnesota and North Dakota still contain more than 96 percent of the acreage enrolled in the FWP (Table 1.1-1). The 2008 Farm Bill adds "land that, after January 1, 1990, and before December 31, 2002, was cropped during at least three of 10 years and was subject to the natural overflow of a prairie wetland" to land eligible for enrollment in the FWP. The natural overflow of a prairie wetland is the area subject to flooding above and beyond the natural wetland boundary, and producers would be allowed to certify that they have land that qualifies.

3.1.5 Lands Authorized for Tree Thinning and Customary Forestry Management Activities

The purpose of tree thinning and other customary forestry practices on CRP lands, as identified in the 2008 Farm Bill, is to improve the wildlife benefits of certain CPs and other resource conditions on the land. The CPs where this activity is authorized are tree-related and/or are for shelterbelt, windbreak, and wildlife corridor CPs. Appendix C presents the acreages of the CPs by State.

3.2 BIOLOGICAL RESOURCES

3.2.1 Definition of the Resource

Biological resources include animal species and the vegetative species that compose the habitats and ecosystems in which they are found. For this analysis, biological resources are divided into the following categories: vegetation, wildlife, and protected species. Vegetation and wildlife refer to the plant and animal species, both native and introduced, which characterize a region. Protected species refers to federally threatened and endangered species and their designated critical habitat, both of which are protected under the Endangered Species Act (ESA). Critical habitat for threatened or endangered species is defined as a specific geographical area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection (USFWS 2008a).

3.2.2 Affected Environment

3.2.2.1 *Vegetation and Wildlife*

The geographic scale of the lands affected by the select provisions of the 2008 Farm Bill encompasses the entire U.S. and its territories; hence, a great variety of terrestrial and aquatic plant and animal species may be affected by the Proposed Action Alternative. Given the national scale of CRP and the programmatic level of this analysis, it is not feasible to list all of the species that may be present on lands eligible for enrollment, but broad generalizations based upon the

organizing principle of terrestrial ecoregions can be made. Ecoregions are areas of relatively homogenous soils, vegetation, climate, and geology, each with associated wildlife adapted to that region. The major terrestrial ecoregions of the continental U.S. and common wildlife species as described by Bailey *et al.* (1995) are briefly summarized in Appendix D.

3.2.2.2 *Protected Species*

The USFWS is the lead agency governing threatened and endangered species. Federal agencies proposing activities that could potentially affect a protected species must consult with the USFWS. Protected species often have very specific living conditions based on their reproductive requirements. A total of 1,353 protected species have been determined to be threatened and endangered within the U.S. and its territories (Table 3.2-1). Of these, 511 listed species have designated critical habitat (USFWS 2008b).

Table 3.2-1. Protected Species within the U.S.

Species Group[1]	Number of Threatened or Endangered Species	Number of Species with Designated Critical Habitat
Birds	90	22
Mammals	82	25
Amphibians	23	8
Reptiles	40	15
Fishes	139	61
Insects/Arachnids	69	22
Clams/Snails/Crustaceans/Corals	169	37
Plants	744	321
TOTAL	**1,353**	**511**

[1] Includes terrestrial and marine species
Source: USFWS 2008a, USFWS 2008b

3.3 WATER RESOURCES

3.3.1 Definition of the Resources

Freshwater is necessary for the survival of most terrestrial organisms, and is required by humans for drinking and agriculture, among other uses; however, less than one percent of the Earth's water is in the form of freshwater that is not bound in ice caps or glaciers. Water resources potentially affected by the Proposed Action include surface water, groundwater, wetlands and

floodplains. The Clean Water Act (CWA) and the Safe Drinking Water Act are the primary Federal laws that protect the nation's waters.

Surface water in rivers, streams, creeks, lakes, and reservoirs supports everyday life through uses such as drinking water and other public uses, irrigation, and industrial uses. Of all the water used in the U.S. in 2000 (about 408 billion gallons per day), about 64 percent came from fresh surface water sources (USGS 2005a). Surface runoff from rain, snow melt, or irrigation water, can affect surface water quality by depositing sediment, minerals, or contaminants into surface water bodies. Surface runoff is influenced by meteorological factors such as rainfall intensity and duration, and physical factors such as vegetation, soil type, and topography.

Groundwater is the water that flows underground and is stored in natural geologic formations called aquifers. It is ecologically important because it sustains ecosystems by releasing a constant supply of water into wetlands and contributes a sizeable amount of flow to permanent streams and rivers (USDA FSA 2003). In the U.S. more than 50 percent of water consumed daily, approximately 90 billion gallons, is groundwater. More than two-thirds of this amount is used for irrigation, and the remainder is used for drinking water and other domestic uses.

Wetlands are defined by the USDA (in 7 CFR 12.2) as lands that:

> *"have a predominance of hydric soils; are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in saturated conditions; and under normal circumstances do support a prevalence of such vegetation, except that this term does not include lands in Alaska identified as having a high potential for agricultural development and a predominance of permafrost soils."*

Similarly, EPA defines wetlands (in 40 CFR 230.3(t)) as:

> *"those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."* (Figure 3.3-1).

Wetlands provide rich habitat for a diverse range of plant and animal species, protection from flooding and erosion, and are important to the nutrient cycle.

Floodplains are the lowlands adjacent to rivers and streams that are subject to flooding. Flooding occurs when water bodies receive a greater volume of water than they can handle at one time. This usually occurs in the early spring during snowmelt or heavy rains. Floodplains hold the excess water allowing it to release slowly into the river system and seep into groundwater aquifers. Floodplains also give time for sediment to settle out of floodwaters, thereby removing some of it from the rivers and streams. Floodplains often support important wildlife habitat and are frequently used by humans as recreation areas. They are also usually very fertile making them desirable farm lands.

Figure 3.3-1. Prairie Pothole Wetlands.

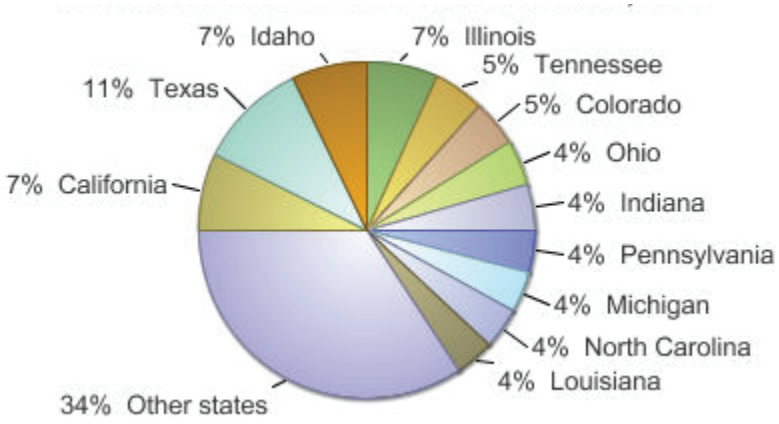
3.3.2 Affected Environment

3.3.2.1 *Surface Water*

Surface water in rivers, streams, creeks, lakes, and reservoirs supports everyday life through uses such as drinking water and other public uses, irrigation, and industrial uses. Of all the water used in the U.S. in 2000 (about 408 billion gallons per day), about 64 percent came from fresh surface water sources (USGS 2005a). Figure 3.3-2 shows surface water withdrawals throughout the U.S.; Texas uses the greatest amount of surface water relative to all other States.

Because of the large dependency on surface water for everyday use, surface water quality is of great importance. Surface water quality is determined by the natural, physical, and chemical properties of the land that surrounds the water body. The topography, soil type, vegetative cover, minerals, and climate all influence water quality. When land use affects one or more of these natural physical characteristics of the land, water quality is almost always impacted to some extent. These impacts may be positive or negative, depending on the type, duration and extent of the change in land use. Agricultural practices have the potential to substantively impact water quality due to the vast amount of acreage devoted to farming nationwide and the great physical and chemical demands that agricultural use imposes on the land. The most common types of

agricultural pollutants include excess sediment, fertilizers, animal manure, pesticides and herbicides.



Source: USGS 2005a

Figure 3.3-2. Fresh Surface Water Withdrawals, 2000.

The principal law governing pollution of the nation's surface water resources is the CWA. The Act utilizes water quality standards, permitting requirements, and monitoring to protect water quality. EPA sets the standards for water pollution abatement for all waters of the U.S. under the programs contained in the CWA but, in most cases, gives qualified States the authority to issue and enforce permits.

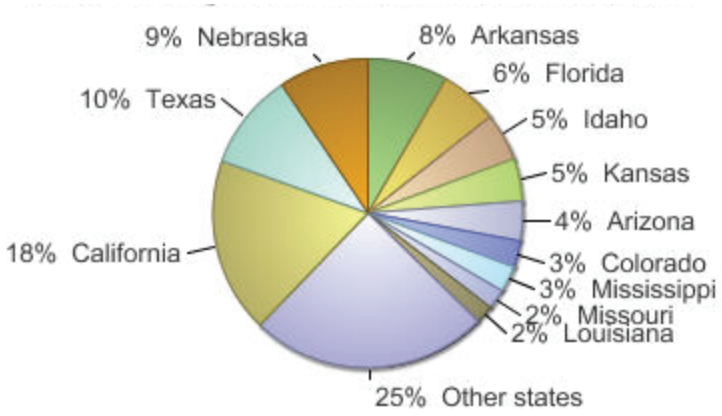
Normal, routine, and continuous agricultural activities such as plowing, cultivating, and harvesting crops, maintenance of drainage ditches, and construction and maintenance of irrigation ditches, farm or stock ponds, and farm roads in accordance with best management practices (BMPs) are exempt from CWA permitting requirements.

3.3.2.2 *Groundwater*

Groundwater is an important resource as it supplies water to people in areas with insufficient surface water. In 2000, approximately 70 billion gallons of groundwater were consumed daily (USGS 2005b). The majority of groundwater withdrawals, 68 percent, were used for irrigation and 19 percent were used for public purposes, mainly to supply drinking water (USGS 2005b).

Figure 3.3-3 shows groundwater withdrawals throughout the U.S., with California using the greatest amount of groundwater relative to all other States. Groundwater is also ecologically important because it supplies water to wetlands, and through groundwater-surface water interaction, groundwater contributes flow to surface water bodies. Similarly, surface water collected in internal basin lakes or playas may recharge groundwater supplies.

Groundwater levels vary seasonally and annually depending on hydrologic conditions. When groundwater is used at a rate faster than it can be replenished, the water table declines and land



Source: USGS 2005a

Figure 3.3-3. Total Fresh Ground Water Withdrawals, 2000.

can subside. If subsidence occurs from groundwater overuse, it is impossible for the underlying aquifer capacity to return to its pre-drawdown level. While the recharge rate of an aquifer is limited to natural constraints such as soil type, slope, and the underlying geology of the land, certain conservation practices can help reach an aquifer's maximum recharge potential. Constructed wetlands such as playas are one such practice that can contribute to groundwater recharge.

The largest aquifer in the U.S. is the High Plains Aquifer (also known as the Ogallala Aquifer), which underlies parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming. About 30 percent of the groundwater used for irrigation in the U.S. is pumped from this aquifer. Groundwater withdrawals from the aquifer for irrigation in 2000 were 21 million acre-feet (McGuire 2007). This use has led to significant declines from pre-development water levels in many areas. In the central and the Southern High Plains, the depth of the water table has declined from 100 to 200 feet from its historic elevation. Maintaining groundwater at sustainable levels is an important management issue throughout the country.

Groundwater is an important source of drinking water for more than half of the people in the U.S. In rural areas, almost all domestic water is supplied by groundwater. Agricultural sources of groundwater contaminants can include fertilizer and pesticide application, spilled oil and gasoline from farm equipment, nitrates, and pathogens from animal manure. Nitrates are the most common groundwater contaminant in the U.S. (USDA FSA 2003).

The EPA defines a sole source aquifer (SSA) as an aquifer that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. The SSA protection program is authorized by Section 1424(e) of the Safe Drinking Water Act of 1974 (Public Law 93-523, 42 USC 300 et seq.). The SSA designation is one tool to protect drinking water supplies in areas where there are few or no alternative sources to the ground water resource. There are 73 designated SSAs in the U.S. and its territories; more of them are in the eastern or western EPA regions then in the heavily farmed areas in the mid-western EPA regions (EPA 2008a).

3.3.2.3 *Wetlands*

Wetland types can be divided into two major groups: coastal and inland. The FWP is primarily concerned with inland or freshwater wetlands. Some of the major types of inland wetlands include freshwater marshes, swamps, riparian forested wetlands, and peatlands. Freshwater marshes are found throughout the U.S. and dominate the prairie pothole region of the northern plains. These wetlands can be permanently or temporarily flooded and are characterized by herbaceous plants called "emergents" that grow with their stems partly in and out of the water (Mitsch and Gosselink 1993).

Wetlands perform many functions that are important to society, such as improving water quality, recharging groundwater, providing natural flood control, and supporting a wide variety of fish, wildlife and plants. The U.S. has lost nearly half of the wetland acreage that existed in the lower 48 States prior to European settlement (Hanson 2006). Recognition of the environmental and economic benefits of wetlands has led to several laws, regulations, and other governmental policy aimed at preserving and even restoring wetlands.

3.3.2.4 *Floodplains*

Floodplains are defined by the Federal Emergency Management Agency (FEMA) as those low lying areas that are subject to inundation by a 100-year flood, a flood that has a one percent chance of being equaled or exceeded in any given year. Activities within a floodplain have a potential to affect the flooding of lands downstream of the activity. Based on EO 11988 Floodplain Management, Federal agencies are required to avoid, to the extent possible, adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development.

The largest river and floodplain system in the U.S. is associated with the flat, low-lying floodplain of the Mississippi River that is dependent on the flooding continuum of the river. The Mississippi River floodplain consists of more than 30 million acres (Delaney and Craig 1997). Floodplains provide for flood and erosion control support that helps maintain water quality and contribute to sustaining groundwater levels. Floodplains also provide habitat for plant and animal species, recreational opportunities, and aesthetic benefits.

3.4 SOILS

3.4.1 Definition of the Resource

Soil resources for this analysis include lands that are used in the areas affected by the select provisions of the CRP modified by the 2008 Farm Bill. This includes lands:

- Determined to be environmentally sensitive land of special significance;
- Where row crop agricultural drainage systems would be used;
- That support commercial pond-raised aquaculture;
- With flooded prairie wetlands; and

- Planted with trees and/or windbreaks, shelterbelts, riparian buffers, and wildlife corridor conservation covers.

Soils are formed mainly by the weathering of rocks, the decaying of plant matter, and the deposition of materials such as chemical and biological fertilizers that are derived from other origins. Soils are differentiated based on characteristics such as particle size, texture and color, and classified taxonomically into soil orders based on observable properties, such as organic matter content and degree of soil profile development (Brady and Weil 1996).

3.4.2 Affected Environment

Soil resources are greatly influenced by factors such as climate, soil properties, vegetative cover, and erodibility potential. Soil erosion is a naturally occurring event and the erosion rates are relatively slow; however, human activity can greatly accelerate the rate of erosion. Poor farming practices, loss of vegetation through deforestation, over-grazing and the maintenance of agricultural land are some of the factors that make soils more susceptible to erosion. "Erosion removes the topsoil first, which is the layer with the highest organic matter content and where the most biological activity occurs. Once this nutrient rich layer of soil is gone, plant growth decreases and erosion increases significantly" (USDA FSA 2003).

Soils susceptible to erosion are identified using the Erodibility Index (EI). The EI provides a numerical expression of the potential for a soil to erode based on factors such as topography and climate. The index value is derived from the Revised Universal Soil Loss Equation (RUSLE) for water erosion, and the Wind Erosion Equation for wind erosion. Highly erodible lands (HEL) are those with an index value of eight or higher (USDA FSA 2003; USDA NRCS 2008b). To be eligible for CRP, soils must be highly erodible. The 2002 Farm Bill, as amended, contains soil conservation compliance requirements for producers using HEL.

Figure 3.4-1 presents a USDA map depicting HEL with an EI greater than or equal to eight on cropland in the U.S. The most highly erodible soils are primarily in the Midwest and Northern Plain States, in areas that lie within the Mississippi and Missouri rivers watershed. A list of soils considered highly erodible are developed and maintained on a county level by NRCS.

3.5 SOCIOECONOMIC RESOURCES

3.5.1 Definition of Resource

Socioeconomic analyses generally include detailed investigations of the prevailing population, income, employment, and housing conditions of a community or area of interest. The socioeconomic conditions of a region of influence could be affected by changes in the rate of population growth, changes in the demographic characteristics, or changes in employment caused by the implementation of the Proposed Action.

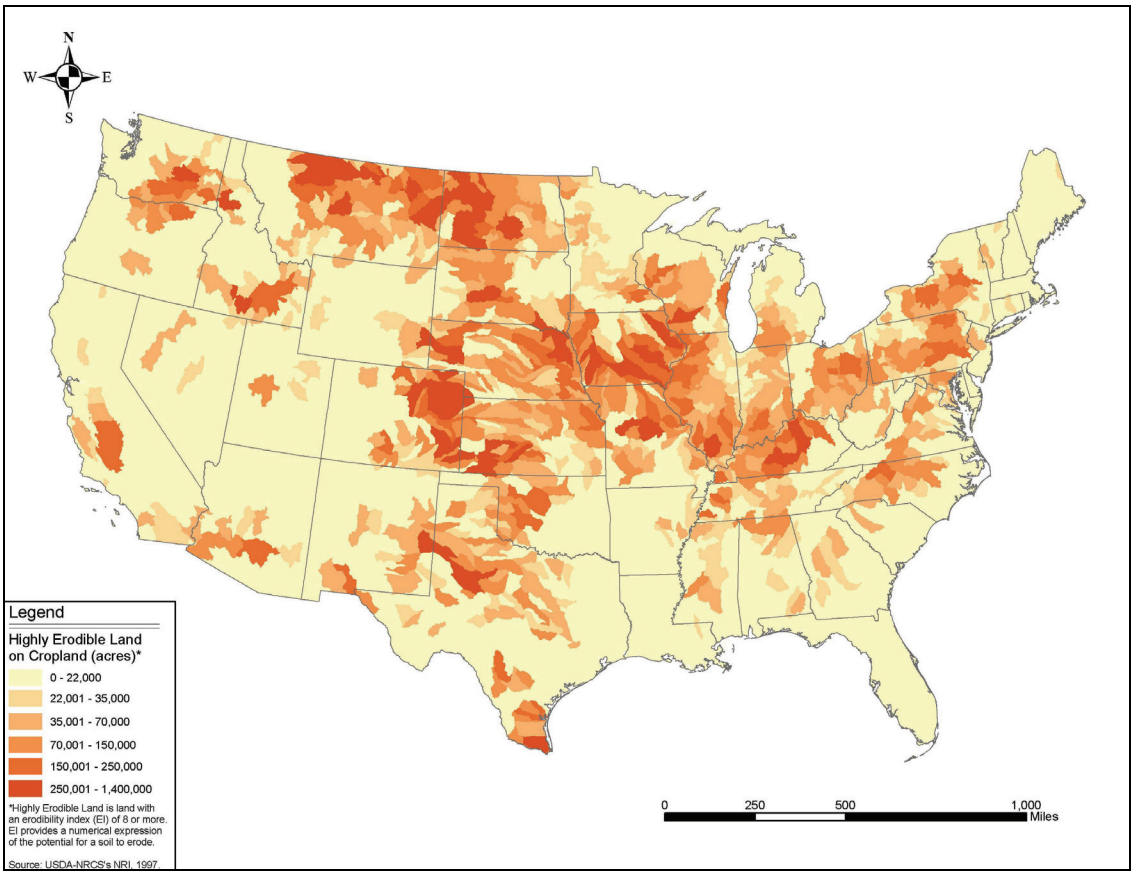


Figure 3.5-1. Highly Erodible Land on Cropland in the U.S. (by watershed) (USDA FSA 2003: 2-6).

Socioeconomic resources within this document include total number of farms, farms receiving government payments by region and for the entire United States, and farm household income. Additionally, to analyze the different components of the 2008 Farm Bill CRP provisions, information on the contracts and acreage within varying CRP practices, and trends in primary field crops and aquaculture activities between 2003 and 2007 are identified. These areas identify the components essential to describe the broad-scale demographic and economic components of the national agricultural operator population. This section summarizes the available data, which is provided in Appendix E. Information in this section is being tiered from the 2003 PEIS for the CRP (USDA FSA 2003).

3.5.2 Affected Environment

3.5.2.1 *Number of Farms & Land in Farms*

Between 1997 and 2006, the number of farms in the U.S. increased 8.99 percent. Between 1997 and 2002, the number of farms increased 11.36 percent, whereas, the number of farms declined 2.13 percent between 2002 and 2006. More recently, estimates of farm numbers within the U.S. continue to show a downward trend in the number of farms (USDA NASS 2008).

Since 2002, the average size of a farm in the U.S. has increased by nine acres to 449 acres per farm (approximately 2.0 percent). The USDA (USDA NASS 2008) found that the majority of farms (approximately 83.3 percent) have less than $100,000 in sales (i.e., economic size class) and only 4.1 percent of the total farms had sales in excess of $0.5 million. The land in farms is more highly concentrated toward larger economic sales classes; the 4.1 percent of farms with sales in excess of $0.5 million hold 23.4 percent of the total land in farms. The 83.3 percent of farms with less than $100,000 in sales hold approximately 39.5 percent of the total land in farms (USDA ERS 2007).

3.5.2.2 *CRP Payments*

USDA Agricultural Resource Management Survey (ARMS) data indicates that in 2006, approximately 44.3 percent of all farms (358,285 farms) received at least one type of government payment associated with agriculture (USDA ARMS 2007). When limited to CRP payments, approximately 17.2 percent of all farms received payments with the average farm payment being approximately $6,768. Table E-1 in Appendix E presents CRP payment statistics by region of the country.

3.5.2.3 *Farm Household Income*

The majority of household income from most farm types comes from off-farm sources, such as a primary occupation other than agriculture or income from another family member. Only households classified as very large farms receive less than 50 percent of their household income from off-farm sources. Only retirement farms had average total household incomes below the average U.S. household income. Table E-2 in Appendix E illustrates data by farm type and by region for the number of farm households, the average total household income, percentage of income from off-farm sources, and percentage of farms with negative household income.

Using 2004 ARMS data and Internal Revenue Service data, Durst (2007) found that 1.2 percent of all farms organized as sole proprietorship had an AGI above $200,000, this increased to 2.5 percent of farm partnerships, and 9.7 percent of farm corporations. According to Durst, the AGI is a measure of income defined for federal income tax purposes. The AGI is taxable income from all sources after deductions for certain adjustments and deductions (i.e., individual retirement arrangements, medical savings accounts, 0.5 percent of self-employment taxes paid, self-employed health insurance costs, and deductions for self-employment retirement plans). Based on this data, Durst indicated that 1.5 percent of farm operator households had AGI above $200,000 (approximately 30,912 farm operator households). Monke (2008) indicated that approximately 3,100 farmers (0.15 percent) had AGI over $2.5 million. In tax year 2006, the Internal Revenue Service estimated that there were 355,204 individual returns (0.3 percent of total individual returns) with AGI in excess of $1 million. The median AGI for tax year 2006 was $31,987.

3.5.2.4 *Primary Field Crops*

The 2003 National Resources Inventory indicates that approximately 368 million acres within the U.S. were cultivated cropland and 58 million acres were uncultivated cropland (USDA NRCS 2003). It was estimated that approximately 16.7 million acres of cropland, pastureland, and CRP

land were considered wetlands in 2003. It has been estimated that drained cropland comprises approximately 41 million acres in the U.S., primarily in the Great Lakes region (Sugg 2007).

3.5.2.5 *Aquaculture*

The 2005 Census of Aquaculture (USDA NASS 2006) identified the value of aquaculture in the U.S. to be approximately $1.1 billion, an increase of 11.7 percent over 1998. Aquaculture products with the highest sales volumes were primarily produced in the Gulf Coast States and along the Pacific Coast. Table 3.1.1 presented the top 10 States with acreage in aquaculture ponds in 2005. Gulf Coast States comprise the majority of those States in the top 10 for acres in aquaculture ponds. Aquaculture provided approximately $168 million in farm employment expenses in 2005, primarily in the Gulf Coast States. Table E-3 in Appendix E presents the top 10 States for aquaculture sales in 2005, and Table E-4 illustrates the on-farm employment expenses for aquaculture in 2005 for the top 10 States. Table E-5 depicts the total employment profile for the top 10 employment expense States and the total wage disbursements for those States. Only Mississippi and Louisiana had greater than 10 percent of farm employment generated from aquaculture activities.

3.5.2.6 *Forestry Management*

Forests in the U.S. cover approximately 33 percent of total land cover or approximately 750 million acres. Approximately 57 percent of forest lands (430 million acres) are privately owned. Estimates of the commercial value of forest products are set at approximately $200 billion per year with an annual production of approximately 400 cubic meters of wood. Approximately 1.9 million acres (0.4 percent of total private forestry acres) of forestry practices are actively included within the CRP as of May 2008. Appendix E presents the total amount of acreage in private forests within the U.S., as well as a comparison to the amount of acreage currently enrolled in CRP forestry practices.

3.6 OTHER PROTECTED RESOURCES

3.6.1 Definition of the Resource

Other protected resources include lands managed by the USFWS, National Park Service (NPS), and the USFS. National Wildlife Refuges are managed by the USFWS. The NPS manages National Parks, National Landmarks, National Historic Sites, and National Wild and Scenic Rivers. The USFS manages National Forests, National Recreation Areas, Wilderness and Wilderness Study Areas, and National Wild and Scenic Rivers. The Bureau of Land Management also manages Wilderness and Wilderness Study Areas. Other protected resources are not likely to be enrolled in CRP (including FWP); however, they may be adjacent to these lands.

3.6.2 Affected Environment

The affected environment of other protected resources would be within the defined boundaries of the lands managed by the Federal government for the purpose of conservation, recreation, or research as described above.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter describes the potential direct and indirect environmental impacts associated with the proposed changes to the CRP for select provisions enacted under the 2008 Farm Bill, and compares impacts to the current program as an environmental baseline. These predictions form the scientific and analytic basis for making reasoned decisions regarding alternative selection and the promulgation of rules and procedures for implementing the selected alternative. Given the national scale of the program and the programmatic level of this analysis, the impacts identified are broadly defined and not specific to a particular ecoregion, species or location. The potential impacts of implementing a specific conservation practice on the resources associated with an individual enrollment application are evaluated by FSA through the use of a site-specific environmental evaluation completed by NRCS or approved TSP during the conservation planning process prior to CRP contract approval, in accordance with 2-CRP (Rev. 4) Amend. 12, Par. 236 B. This site-specific environmental evaluation (form NRCS-CPA-052 or State equivalent) is completed for all assistance provided by NRCS in accordance with NRCS General Manual-(Agency Policy) Section 410.3 and the Memorandum of Understanding (MOU) between NRCS and FSA on CRP technical assistance. This process is consistent with FSA's Environmental Quality and Related Environmental Concerns – Compliance with NEPA (7 CFR 799) and FSA's Handbook on Environmental Quality Programs for State and County Offices (1-EQ). FSA will complete the applicable sections of the NRCS-CPA-052 or State equivalent to document that FSA has completed any required consultation and make the final determination.

The Proposed Action includes the implementation of new CPs that would be used or developed for the new lands eligible for enrollment in the CRP. The following sections describe the parameters and activities that would most likely guide the implementation of the Proposed Action and are used in this analysis to evaluate potential impacts.

Table 4.1-1 provides a summary of the potential impacts on each resource associated with continuing the current program (No Action) and implementing the changes to CRP for select provisions of the 2008 Farm Bill.

4.1.1 Environmentally Sensitive Lands of Special Significance Related to AGI Waivers

The Proposed Action Alternative would allow AGI limitations to be waived if environmentally sensitive lands of special significance were offered by a person determined otherwise to meet eligibility requirements, and the offered land itself also meets the eligibility requirements of CRP. The implementation of this change would involve the same requirements as implementation for other enrolled lands.

Table 4.1-1. Comparison of the Potential Impacts of the Alternatives

Resources	Proposed Action (Expansion)	No Action (Current Program)
Biological Resources vegetation, wildlife, and protected species	Long-term beneficial impacts on vegetation, wildlife, and threatened and endangered species would result from implementing select provisions of the 2008 Farm Bill. Constructed wetlands provide benefits on a national scale of allowing areas that were not previously eligible to become wetlands. Constructed wetlands are valuable habitat for migratory birds and other wildlife, especially those that are playas, which temporarily store water in areas that are predominately dry. Converting aquaculture ponds to more natural wetlands provides wildlife habitat and improves the water quality of the ponds. Only marginally productive aquaculture ponds are likely to be converted, or ponds would be converted for non-economic reasons. Maintaining an appropriate water level is important for obtaining wildlife, vegetation, and protected species benefits, otherwise, adverse impacts to these biological resources may result. If aquaculture ponds were previously unprotected from predation of migratory waterfowl, converting them to natural wetlands may reduce available fish food sources for certain species of migratory waterfowl. Incorporating flooded prairie wetlands into the FWP adds a buffer that provides additional habitat areas for a variety of wildlife. Positive wetlands benefits would occur downstream to aquatic biological systems through increased water quality resulting from the restoration and construction of wetlands under FWP. Tree thinning would only be approved if it improves the condition of resources on the land. Tree thinning improves the health and vigor of the vegetative stand comprising the conservation cover and maintains more open and diverse habitat for wildlife species. Potential short-term localized adverse impacts of tree thinning include increased soil erosion and compaction, temporary noise from machinery and loss of wildlife habitat;	Under the current FWP, only 182,125 acres have been enrolled out of the authorized 1 million acres; therefore, even without the inclusion of the new types of land eligible for enrollment, the program can grow. Lands would continue to be enrolled under CP27 and CP28; however, the benefits of expanding the program to constructed wetlands, aquaculture ponds, and flooded prairie wetlands and associated buffers would not be realized. The impacts of the current FWP on biological resources were evaluated in detail in the 2003 CRP PEIS (USDA FSA 2003). The long-term benefits to vegetation, wildlife and protected species that would be achieved by waiving the AGI limitations for environmentally sensitive lands of special significance would not be realized. Tree thinning is currently authorized by CRP and would continue as currently configured, with no cost share for tree thinning, and a forfeit of the annual rental payment if the refuse generated is commercially used. Site-specific environmental evaluations would determine the potential presence of threatened or endangered species and their critical habitat. If listed species are present, consultation with USFWS would occur prior to implementation of the practices to protect these resources.

Table 4.1-1. Comparison of the Potential Impacts of the Alternatives

Resources	Proposed Action (Expansion)	No Action (Current Program)
Biological Resources vegetation, wildlife, and protected species	however, these would be minimized through the implementation of best management practices (BMPs). The AGI potential waiver provision for environmentally sensitive lands of special significance is beneficial for biological resources since it would allow additional lands into CRP that would otherwise not qualify. If a site-specific environmental evaluation determines the potential presence of threatened or endangered species and their critical habitat in the area, consultation with USFWS would occur prior to implementation of the practices to protect these resources. Potential short-term localized adverse impacts to biological resources are associated with preparation of the land for installation of the conservation practice and include the use of noise-producing machinery during installation and periodic management; however, the noise generated would be similar to that of farm machinery.	
Water Resources surface water, groundwater, wetlands and floodplains	Long-term beneficial impacts to surface water are expected to occur with implementation of the Proposed Action Alternative by creating new or improving existing wetlands under the FWP. Wetlands benefit surface water by filtering out sediments and other pollutants commonly associated with agriculture and by attenuating and storing water that would otherwise contribute to offsite or "downstream" flooding. Conservation practices benefit water resources by reducing sedimentation and decreasing the amount of nutrients and pesticides that may enter surface or groundwater. The waiver of the AGI limitations for environmentally sensitive lands of special significance granted on a case-by-case basis could expand these benefits to additional agricultural lands. Potential short-term localized adverse impacts to surface water resources may occur from the preparation of the land for installation of the conservation practice and periodic management such	Maximum benefits from wetland restoration and inclusion of buffers under CP27 and CP28 would be the same; however, the specific benefits of enrolling wetlands constructed to receive agricultural drainage, converting aquaculture ponds to wetlands, and adding flooded prairie wetlands would not occur. The potential impacts would be similar to those described for the Proposed Action. The No Action Alternative would be a continuation of CRP as it currently exists. The potential impacts to water resources associated with the No Action Alternative are expected to be similar to those described under the Proposed Action Alternative. Under the No Action Alternative, benefits to water resources that would be achieved by waiving the AGI limitations for lands of special environmental significance would not be realized. No cost share for tree thinning and customary forest management activities, and the forfeiture of annual rental payment for commercial use of the thinning by-products were previously assessed by the 2003 CRP PEIS (USDA FSA 2003).

Table 4.1-1. Comparison of the Potential Impacts of the Alternatives

Resources	Proposed Action (Expansion)	No Action (Current Program)
Water Resources surface water, groundwater, wetland	as tree thinning. BMPs, such as silt fencing and vegetative filter strips, would minimize sediment or other pollutants from affecting surface water quality. Wetlands sited to intercept agricultural drainage would significantly reduce nitrogen loads flowing into downstream surface water bodies such as streams, rivers, and lakes. Constructed wetlands that are built in accordance with NRCS Practice Code 656 specifications ensure their size is appropriate for the catchment area and the outlets are appropriately sized, minimizing potential for low water flows downstream. Low flows could cause desired riparian and aquatic vegetation to die, slow water that may then be favorable for certain invasive plant species to become established, may deplete water quantity needed by terrestrial and aquatic wildlife for survival, and can increase parasitic infestation of fish. In addition, low water flow could increase water temperature and lower oxygen beyond levels needed by aquatic plants and animals, and interrupt stream connectivity. Retiring aquaculture ponds from production and restoration as wetlands would benefit water quality of the pond and eliminate effluent discharge associated with earthen aquaculture facilities. Inclusion of cropped land that was flooded prairie wetland and buffers would benefit surface water quality by taking additional land out of production and this would lessen use of agricultural chemicals and fertilizers that may enter nearby waters. It also would filter out some of the sediments before being deposited in the wetland, thereby extending the life of the wetland. Potential short-term localized adverse impacts to surface water could occur from tree thinning due to increased soil erosion and compaction from ground disturbance and heavy equipment; however, these impacts would be minimized through the implementation of industry standard BMPs. Tree thinning maintains the health and vigor	

Table 4.1-1. Comparison of the Potential Impacts of the Alternatives

Resources	Proposed Action (Expansion)	No Action (Current Program)
Water Resources surface water, groundwater, wetland	of the vegetative stand which diminishes soil erosion that may contribute to sedimentation of surface waterbodies. Long-term beneficial impacts to groundwater could occur with implementation of the Proposed Action Alternative by creating new or improving existing wetlands under the FWP. Wetlands benefit groundwater quality by delaying stormwater runoff and giving it time to infiltrate into the aquifer. Wetlands also sustain vegetation, helping to remove excess nitrogen from runoff, reducing the amount that could contaminate groundwater supplies. Creating new or improving existing wetlands would involve taking agricultural lands out of production, which could increase groundwater storage by reducing groundwater consumption in areas using groundwater for irrigation, and by increasing groundwater recharge. Removing cropland from production would also potentially lessen contamination of groundwater sources from pollutants associated with agriculture. Groundwater withdrawals for aquaculture ponds would also be eliminated if they are converted to natural wetlands. The waiver of the AGI limitations for environmentally sensitive lands of special significance could increase these benefits. Tree thinning has little potential to negatively affect groundwater.	
Soils	Inclusion of new eligible land types and their associated upland buffers in the restoration of farmed or converted wetlands benefits soils by providing vegetative cover that stabilizes soil, thereby reducing erosion, and increases the organic content of soils. This also contributes to carbon sequestration in soils. The waiver of the AGI limitations for environmentally sensitive lands of special significance expands the benefits of taking agricultural lands out of production to additional lands, benefiting soils by reducing erosion,	FWP would continue to enroll agricultural lands under CP27 and CP28. Conversion of agricultural lands to a wetland and associated vegetative buffer reduces soil erosion and improves the organic content of soils. There are no substantial benefits to soils by the enrollment of wetlands constructed to receive row crop drainage water or aquaculture ponds; therefore, there are no adverse effects on soils if those new categories of eligible lands are not included in the FWP. The benefits to soils from the inclusion of flooded prairie wetlands would not be realized. The No Action Alternative would be a

Table 4.1-1. Comparison of the Potential Impacts of the Alternatives

Resources	Proposed Action (Expansion)	No Action (Current Program)
Soils	increasing their organic content, and contributing to additional carbon sequestration. Tree thinning that ensures the preservation of the conservation cover and improves resource conditions on the land contributes to reducing soil erosion and increasing soil organic content. Short-term localized adverse impacts on soils could result from disturbance while installing conservation covers on environmentally sensitive land of special significance, during construction of wetlands (e.g., installation of constructed and converted wetland buffer conservation covers) and during tree thinning. These activities could increase soil erosion and compaction; however, employing industry standard BMPs for erosion control, soil compaction and use of vegetative buffers minimizes this potential.	continuation of CRP as it currently exists. The potential impacts to soils associated with the No Action Alternative are expected to be similar to those described under the Proposed Action Alternative as agricultural lands would continue to be taken out of production and conservation covers would continue to be installed. However, benefits to soils that would be achieved by waiving the AGI limitations for environmentally sensitive lands of special significance would not be realized. Under the No Action Alternative, tree thinning would continue as an authorized activity and have the same benefits and short-term localized adverse impacts on soil as the Proposed Action.
Socioeconomics	Implementation of the Proposed Action would result in small, positive, or marginal benefits to society. For new AGI limitations and possible waivers for environmentally sensitive lands of special significance, the number of farmers who meet or exceed the enacted AGI cap is small and would not result in adverse socioeconomic effects. Including additional lands that would not otherwise be eligible for CRP into the program extends the benefits of reduced soil erosion, increased water quality, and additional wildlife habitat to society. Wetlands provide an overall net societal benefit associated with improved water quality and increased wildlife habitat. Since the Proposed Action would make construction of wetlands eligible for cost share, there would be no long-term negative impact to farm-level household income or population. Constructing wetlands is an expensive practice to install and may have short-term negative impacts on the participant's household income. However, it is unlikely constructing wetlands would be undertaken by someone who could not afford it. The	Continuation of the CRP as it is currently configured would still require AGI limitations, but not offer waivers for environmentally sensitive lands of special significance. Tree thinning would continue to be authorized, but without cost share, and the annual rental payment would be forfeit on the acreage thinned if the refuse is commercially used. The socioeconomic impacts of the current program have been previously assessed in the 2003 CRP PEIS (USDA FSA 2003). The 2003 CRP PEIS (USDA FSA 2003) did not find a substantial negative effect from the FWP to general society; however, by selecting the No Action Alternative, society would forego the benefits associated with the inclusion of the newly proposed eligible land types.

Table 4.1-1. Comparison of the Potential Impacts of the Alternatives

Resources	Proposed Action (Expansion)	No Action (Current Program)
Socioeconomics	practice of using wetlands for the water quality functions they provide would create an overall net societal benefit associated with increased water quality and wildlife habitat. As such, inclusion of these acres would provide long-term positive socioeconomic benefits. Economic and non-economic positive net benefits would be derived from tree thinning through cost sharing, excluding the costs of associated infrastructure to remove the forest refuse derived from management activities. The inclusion of flooded prairie wetlands would be a small amount of acreage throughout the applicable region; therefore, it would have little socioeconomic effect. Individual producers are not likely to choose to enroll their aquaculture ponds into the FWP program unless the return from the annual rental rate is essentially equal to or greater than the return from producing the aquaculture products. Therefore, only marginally productive ponds are likely to be converted or a non-economic incentive exists.	
Other Protected Resources	Positive long-term benefits to other protected lands would be expected to result from this action. Wetland construction or restoration would positively affect adjacent natural lands set aside for conservation, research, or recreation by complementing and enhancing their missions. Long-term beneficial impacts to other protected resources are expected to occur from allowing enrollment of environmentally sensitive land of special significance when AGI limitations are waived. The benefits are derived by providing wildlife habitat that otherwise would not exist or by improving such habitat, increasing water quality through reducing sedimentation and pollution from agriculture, and enhancing these protected lands by providing an additional buffer from more incompatible land uses. Tree thinning that improves the health	Payment reductions for commercial use of tree thinning would continue consistent with current CRP policy; therefore, no cost share for tree thinning would be offered and no impact to other protected resources would occur. Continuation of the CRP as it is currently configured would still require AGI limitations but not offer waivers for environmentally sensitive lands of special significance. This would not have a negative impact on other protected resources, but the benefits of including these types of lands in CRP would not extend to other protected resources. No negative impacts to other protected lands would be expected to result from not including the new eligible land types in the FWP. Continuation of FWP as configured would still offer benefits of installing CP27 and CP 28 adjacent to other protected resources.

Table 4.1-1. Comparison of the Potential Impacts of the Alternatives

Resources	Proposed Action (Expansion)	No Action (Current Program)
Other Protected Resources	of the vegetative stand and other resources on the land benefits other protected resources by reducing the potential for soil erosion that could affect water quality, and maintaining habitat for wildlife. Employment of BMPs that reduce soil erosion and control runoff would minimize the potential for adversely affecting adjacent lands during installation and management of conservation covers. Short-term, temporary localized negative impacts to other protected resources could occur from noise produced by machinery used to prepare land for installing the conservation cover, the construction of wetlands, and their subsequent periodic management including tree thinning. The disturbance from machinery would not be greater than that from the No Action Alternative, nor from machinery used on actively farmed lands. Providing cost share for tree thinning would not have impacts on other protected resources.	

4.1.2 Constructed Wetlands

The activities that would be required to construct wetlands to receive flow from a row crop agricultural drainage system designed to provide nitrogen removal and other wetland functions are likely to include the following:

- Locate the wetland to minimize the potential for contamination of ground water resources, and to protect aesthetic values.
- Provide the appropriate flow control devices to maintain the water level needed to achieve the desired water treatment and support hydrophytic vegetation.
- Use soils in constructing the embankments that are suitable for that purpose and provide erosion protection for the embankments.
- Select wetland plants that are suitable for local climatic conditions and tolerant of the concentrations of nutrients, pesticides, salts and other contaminants flowing into the wetland. Avoid invasive or non-native species that could be a problem in native habitats.

4.1.3 Conversion of Aquaculture Ponds to Wetlands

Taking commercial aquaculture ponds out of service and converting them to wetlands would be similar to the activities for wetland construction identified in the previous section. Most aquaculture ponds use groundwater for their water supply because it is more consistent in quantity and quality than surface water (D'Abramo and Brunson 1996); therefore, it may be more difficult to establish the wetland hydrology.

4.1.4 Wetland Restoration of Flooded Prairie Wetlands

Re-establishing the wetland function and value of flooded prairie wetlands would likely have similar requirements as CP27 used for other farmable wetlands. Restoration of wetland hydrology and vegetation would be the principal objectives, and the activities under Section 4.1.1 would likely be used to meet them. Figure 4.1-1 provides a cross-section of a typical wetland catchment zone showing upland to wetland areas.

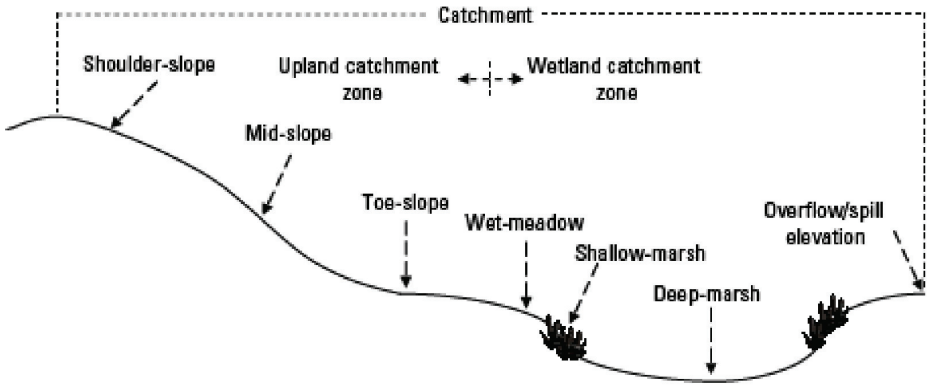


Figure 4.1-1. Wetland Catchment Zones.

4.1.5 Tree Thinning and Customary Forest Management Activities Related to Trees, Windbreaks, Shelterbelts and Wildlife Corridors

The Proposed Action Alternative would provide cost sharing for tree thinning and other customary forest management activities on tree-related CPs, as well as CPs for windbreaks, shelterbelts, and wildlife corridors. Under the current program, tree thinning, pruning and timber stand improvement are allowed but not cost shared. Tree-thinning may include mechanical ground disturbance for clearing and hauling debris, and use of hand tools and/or herbicides.

4.2 BIOLOGICAL RESOURCES

Impacts to biological resources would be considered significant if implementation of a proposed action reduced wildlife populations to a level of concern, removed land with unique vegetative characteristics, or resulted in incidental take of a protected species or critical habitat.

4.2.1 Proposed Action Alternative

Under the Proposed Action, the overall amount of acreage that can be enrolled in FWP nationally continues to be up to 1 million acres total, but State allocations may increase to 200,000 acres at USDA's discretion; therefore, maximum acreage providing benefits for restoration of farmable wetlands would not change. As of May 2008, only 182,125 acres have been enrolled in the FWP within 14 States. The Proposed Action expands the eligibility requirements so that the FWP can be better utilized. The Proposed Action increases the size of wetlands eligible for enrollment, except in the case of aquaculture pond conversion. The 2008 Farm Bill allows USDA, in consultation with the State Technical Committee, to determine the associated wetland buffer size that can be converted from aquaculture production.

4.2.1.1 *Vegetation and Wildlife*

CRP lands including wetlands provide extremely important habitat for a wide array of wildlife—mammals, birds, reptiles, amphibians, fish and invertebrates like crabs, crayfish, and mosquitoes. Some animals live their entire lives in wetlands and others depend on wetlands for essential parts of their life cycle such as breeding or migratory stopovers. Many of the U.S. breeding bird populations—including ducks, geese, woodpeckers, hawks, wading birds, and many song-birds—feed, nest, and raise their young on CRP lands. Migratory waterfowl use coastal and inland wetlands as resting, feeding, breeding, or nesting grounds for at least part of the year (EPA 1995).

Environmentally Sensitive Lands of Special Significance Related to AGI Waivers

The Proposed Action Alternative would allow USDA to waive the AGI limitations if environmentally sensitive lands of special environmental significance were offered by a person or entity determined otherwise eligible, and the offered land itself, also meets eligibility requirements of CRP. These agricultural lands would likely have a need for vegetation and wildlife benefit improvement substantially met by enrollment in the CRP. Any environmentally sensitive land determined to be of special significance would be evaluated by a multi-disciplinary team on a case-by-case basis to determine if that land would qualify for an AGI waiver. The impacts of expanding the program to include these types of lands would have long-term positive impacts on vegetation by reducing soil erosion and improving water quality. Long-term benefits for wildlife would consist of providing habitat that otherwise would not exist, or improving such habitat. This would contribute to increasing wildlife diversity in limited instances in a variety of sensitive ecoregions.

Constructed Wetlands

The primary purpose of constructed wetlands is to reduce nutrient loading of influent and to provide residual wildlife habitat. Expanding the eligibility for the FWP to include constructed wetlands designed to intercept and remove contaminants from row crop agriculture would encourage producers to create wetlands and upland buffers to retain and treat the drainage from their fields. Wetland buffers would provide additional vegetation benefits from the establishment of various types of vegetation. Vegetation benefits would be 10 to 15 years in duration, and would be contained within individual wetland complexes and their associated buffers. The

constructed wetlands would likely improve water quality in downstream water bodies, which would benefit both terrestrial and aquatic wildlife species and their habitat. Short-term localized adverse impacts on wildlife could occur during the construction of the wetlands and installation of the buffer conservation practices. Additionally, noise producing machinery could disturb wildlife in the vicinity depending on the timing of construction. Both of these impacts, however, would be temporary in nature and through the incorporation of BMPs would be minimal. A potential impact of constructed wetlands is lowering of peak downstream flows. Low flows could cause desired riparian and aquatic vegetation to die, or may slow water that may then be favorable for certain invasive plant species to become established. Lower flows could reduce water quantity needed by terrestrial and aquatic wildlife for survival, and can increase parasitic infestations of fish. In addition, low water flow can increase water temperature and reduce dissolved oxygen beyond levels needed by aquatic plant and wildlife, and interrupt stream connectivity in intermittent stream systems. However, the potential for these outcomes are minimized if wetlands are constructed in accordance with NRCS Practice Code 656 specifications designed to ensure the wetland size is appropriate for the catchment area and outlets are appropriately sized, minimizing the potential for low flows.

Aquaculture Ponds

The conversion of commercial aquaculture ponds into wetlands would provide the benefit of additional wetland vegetation, and increased carbon sequestration. Vegetation benefits would be 10 to 15 years in duration; however, the ratio of the size of the pond wetland to an upland buffer shall be determined by the USDA.

Converting aquaculture ponds into wetlands with an associated buffer would benefit wildlife by providing breeding and foraging habitat for a wide array of species. Frequently, aquaculture ponds use canopy predator nets to prevent the predation of the fish crop by birds; conversion to wetlands would eliminate the need for this protection and allow local and migratory birds to use the wetland for resting, feeding, breeding, or nesting. Establishment of an upland buffer ensures maximum wildlife utility while reducing sediment erosion. Establishing native wetland vegetation would provide additional habitat for terrestrial and aquatic species and further improve water quality critical for aquatic species. The conversion of earthen-type ponds to wetlands could require some earth moving to establish the wetland hydrology and to prepare the area for planting. The noise produced by the earth moving machinery could adversely impact the local wildlife depending on the time of construction; however, the impact would be temporary and localized. Maintaining the appropriate water level to benefit wildlife is essential to the success of this conversion and should be considered during project selection.

Flooded Prairie Wetlands

Inclusion of flooded prairie wetlands would have the same benefits to vegetation as the current aspects of the FWP. Taking actively cultivated lands out of production and installing conservation covers of both wetland species and upland buffers re-establishes native vegetation and diminishes soil erosion that threatens the long-term viability of the conservation cover. Vegetation benefits would be 10 to 15 years in duration, and would be limited to surrounding buffer tract areas.

Inclusion of flooded prairie wetlands would increase the benefits to wildlife by enlarging restored habitat and increasing the water quality of prairie wetlands. Taking flooded areas out of agricultural production reduces sediment and agricultural pollutants from reaching the wetland proper. Prairie pothole wetlands are important waterfowl breeding habitat and are heavily used by spring migrant waterfowl and other birds such as rails, sandhill cranes, and shorebirds. Restoration of the flooded areas would benefit the recruitment of these species and provide additional valuable habitat that is also useful for grassland birds. Short-term localized adverse impacts to wildlife could result during installation of the buffer conservation practices. Noise producing machinery could also temporarily disturb wildlife in the vicinity. If construction occurred during nesting season, birds could abandon their nests; therefore, timing of construction activities should be considered during project selection.

Tree Thinning and Customary Forest Management Activities Related to Trees, Windbreaks, Shelterbelts and Wildlife Corridors

The Proposed Action Alternative would provide cost sharing for tree thinning and other customary forest management activities on tree-related CPs, as well as CPs for windbreaks, shelterbelts, and wildlife corridors. Additionally, a payment reduction will no longer be assessed if the CRP participant uses the refuse generated for commercial purposes. Under the current program, tree thinning, pruning and timber stand improvement are allowed but not cost shared. Commercial use of the refuse is only allowed if removal of the refuse enhances wildlife, reduces undesirable insect and disease infestation, and reduces wildfire hazard by removing excess fuels that would threaten the long-term viability of the conservation cover. Also, if the operator makes commercial use of the thinning refuse consistent with current policy, the operator must forfeit the annual rental payment for the affected acres for the year the forestry is conducted.

As stated in the 2008 Farm Bill, the primary purpose of cost-sharing tree thinning on CRP must be to improve the wildlife benefits and resource conditions on the land. The refuse may be disposed of or used for commercial purposes, e.g. wood pulp or mulch. Tree thinning benefits the vegetative conservation cover by reducing competition among plants that may diminish the desired species composition and plant stand structure designed to meet a particular conservation objective, and improves the health and vigor of plants that may have suffered damage or disease. Generally, the CPs where tree thinning would occur in CRP are designed to maximize wildlife benefits by including plant seed and plant stock species appropriate to the particular lands proposed for enrollment, and of most use for wildlife species. In addition, specifying placement and distribution of plantings, retention of tree snags, and creation and maintenance of open areas as part of the approved practice design and implementation ensure wildlife benefits for the particular lands enrolled. These techniques promote diversity in vegetation that in turn provide habitat more beneficial for a greater variety of wildlife in a variety of ecoregions.

Thinning of trees permits more light to reach the ground, leading to development and maintenance of an understory that may be used by wildlife for reproduction, nesting, food sources, and cover from predators. Thinning, pruning, and removing tree and other obstructing vegetation (i.e., invasive vines) from CRP acreage benefit certain wildlife by creating larger transit areas. Vegetation important for conservation purposes benefits from culling damaged,

diseased and pest infested trees and limbs that could affect the long-term viability of the conservation cover. Removal of undesirable vegetation that competes with the conservation species for light and nutrients ensures the conservation cover survives and fulfills its intended purposes.

The Proposed Action Alternative of providing cost sharing may induce tree thinning by creating an economic incentive, but the primary purpose must still be to benefit the resources upon the land. As presented in Section 4.5 of this chapter, the economic impacts of the Proposed Action Alternative of providing cost share is neutral. The Proposed Action Alternative therefore is not expected to have positive or negative impacts on vegetation or wildlife.

4.2.1.2 *Protected Species*

Environmentally Sensitive Lands of Special Significance Related to AGI Waivers

The Proposed Action Alternative would allow the USDA to waive the AGI limitations if environmentally sensitive lands of special significance were offered by a person or entity determined otherwise eligible, and the offered land itself also met the eligibility requirements of CRP. These lands would likely have a need for soil, water, vegetation, or wildlife habitat improvement substantially met by enrollment in the CRP. Any environmentally sensitive land determined to be of special significance would be evaluated by a multi-disciplinary team on a case by case basis to determine if the land qualified for an AGI waiver. The conversion of these agricultural lands to a conservation purpose would have long-term benefits for threatened and endangered species and their critical habitat through the improvement of existing terrestrial and aquatic habitats, or providing such habitat where it did not previously exist under agriculture.

Constructed Wetlands, Aquaculture Ponds and Flooded Prairie Wetlands

More than one-third of the U.S.'s threatened and endangered species live only in wetlands, and nearly half use wetlands at some point in their lives (EPA 1995). The loss of wetland habitat is considered one of the main reasons for the listing of many of these species as threatened or endangered. Creating or restoring wetlands by any of the three means in the Proposed Action would have a beneficial effect on species recovery. If a site-specific environmental evaluation identifies potential negative impacts on protected species or their habitat, it is not likely the land proposed for enrollment would be accepted into the FWP, but would be evaluated on a case-by-case basis in consultation with NRCS and USFWS. The Proposed Action, therefore, is not expected to have significant adverse impacts on protected species or critical habitat.

Tree Thinning and Customary Forest Management Activities Related to Trees, Windbreaks, Shelterbelts and Wildlife Corridors

The Proposed Action Alternative would provide cost sharing for tree thinning and other customary forest management activities on tree-related CPs, as well as CPs for windbreaks, shelterbelts, and wildlife corridors. Additionally, a payment reduction will no longer be assessed if the CRP participant uses the refuse generated for commercial purposes. Under the current program, tree thinning, pruning and timber stand improvement are allowed but not cost shared.

Commercial use of the refuse is only allowed if removal of the refuse enhances wildlife, reduces undesirable insect and disease infestation, and reduces wildfire hazard by removing excess fuels that would threaten the long-term viability of the conservation cover. Also, if the operator makes commercial use of the thinning refuse consistent with current policy, the operator must forfeit the annual rental payment for the affected acres for the year the forestry is conducted.

The Proposed Action Alternative of providing cost sharing may induce tree thinning by creating an economic incentive but the primary purpose must still be to benefit the resources upon the land. As presented in Section 4.5 of this chapter, the economic impacts of the Proposed Action Alternative of providing cost share are neutral. Controlled tree thinning that maintains habitat can be beneficial for protected species. If a site-specific environmental evaluation identifies negative impacts on protected species, it is not likely the land would be eligible for tree thinning. The Proposed Action Alternative therefore would not have significant adverse impacts on protected species or critical habitat.

4.2.2 No Action Alternative

Under the No Action Alternative, certain changes to the CRP enacted by the 2008 Farm Bill would not be realized. As of May 2008, more than 34.6 million acres were enrolled in the CRP. The 2002 Farm Bill raised the acreage cap for the CRP to 39.2 million acres, so even under the No Action Alternative there is capacity to increase enrollment. The current FWP also has capacity to increase enrollment. A total of 182,125 acres within 14 States have been enrolled under the FWP. The majority of acreage enrolled in FWP is in Iowa followed by South Dakota, Minnesota, and North Dakota (USDA FSA 2008b). The current FWP program is open to all States up to one million acres total or a maximum 200,000 acres per State.

4.2.2.1 *Vegetation, Wildlife, and Protected Species*

Environmentally Sensitive Lands of Special Significance Related to AGI Waivers

The No Action Alternative is continuation of the CRP as provided for in the 2002 Farm Bill. The current CRP has no provision for the USDA to waive AGI requirements if environmentally sensitive lands of special significance were offered. Continuation of the program would therefore not expand CRP to environmentally sensitive lands, however, since the Proposed Action Alternative only offers waivers on a case-by-case basis, and the total number of acres authorized for enrollment are not changed by this provision, failure to expand the CRP to these lands is not likely to have a negative impact on protected species or critical habitat.

Constructed Wetlands

The benefits of the current CRP program to biological resources were evaluated in the 2003 CRP PEIS (USDA FSA 2003). Constructed wetlands provide additional areas for wetland vegetation, habitat for numerous species of wildlife and protected species. Under the current program, wetland areas that have been cultivated would still be enrolled under CP23, CP23A, and CP27; however, the inclusion of constructed wetlands to clean drainage from row crop agriculture of

nitrogen would not be offered, and subsequent water quality benefits to downstream waters and the wildlife and protected species dependent upon them would not be obtained.

Aquaculture Ponds

Under the No Action Alternative, aquaculture ponds would not be eligible for enrollment in the FWP; therefore, an incentive to take the ponds out of production and convert them to wetlands would not be provided. Because efficiencies in aquaculture are difficult to obtain and operations are labor and cost intensive, the industry is increasingly dominated by fewer operators, and many farmers are abandoning their aquaculture efforts. Failure to expand CRP to include conversion of aquaculture ponds to wetlands could result in the abandonment of many more ponds that have poor water quality and are of little utility to wildlife. The benefits to vegetation, wildlife, and protected species from having these areas as additional productive wetlands would not occur under the No Action Alternative.

Flooded Prairie Wetlands

Taking flooded or overflow area of prairie wetlands out of agricultural production can increase the size of continuous habitat available for wildlife and protected species. By not enrolling these additional areas around prairie wetlands, the benefits to wildlife and protected species of having larger areas in natural habitat would not occur. The No Action Alternative would therefore not maximize the benefits of flooded prairie wetlands to wildlife or protected species, or the benefit of converting additional agricultural land to conservation covers.

Tree Thinning and Customary Forest Management Activities Related to Trees, Windbreaks, Shelterbelts and Wildlife Corridors

Tree thinning and other customary forest management activities carried out as specified in a conservation plan designed for the particular lands enrolled are currently authorized in CRP. Under the No Action Alternative, only the cost share provision and payment reductions for commercial use of the refuse would not be authorized. In a site-specific conservation plan, the potential impacts of forest management practices on vegetation, wildlife, and threatened and endangered species and their habitat are identified. If potential negative impacts to protected species are identified, it is not likely the land would be eligible for tree thinning. The impacts of the current program including tree thinning on protected species have been previously assessed in the 2003 CRP PEIS (USDA FSA 2003).

4.3 WATER RESOURCES

Impacts to water resources would be considered significant if a proposed action resulted in changes to water quality or supply, threatened or damaged unique hydrologic characteristics, or violated established laws or regulations.

4.3.1 Proposed Action Alternative

Under the Proposed Action, the overall amount of acreage that can be enrolled in the FWP nationally remains to be up to one million acres total, with a maximum of 200,000 acres per State,

determined at the discretion of the USDA. The maximum acres providing benefits for restoration of farmable wetlands would not change. As of May 2008, only 182,125 acres have been enrolled in the FWP within 14 States. The Proposed Action expands the eligibility requirements so that the FWP can be better utilized. The Proposed Action would increase the size of wetlands eligible for enrollment, except in the case of aquaculture pond conversion. The 2008 Farm Bill allows the USDA, in consultation with the State Technical Committee, to determine the size of wetland and associated buffer that can be converted from aquaculture production.

4.3.1.1 *Surface Water*

Environmentally Sensitive Lands of Special Significance Related to AGI Waivers

The Proposed Action Alternative would allow the USDA to waive the AGI limitations if environmentally sensitive lands of special significance were offered by a person or entity determined otherwise to meet eligibility requirements, and the offered land itself also meets the eligibility requirements of CRP. The waiver would only be considered on a case-by-case basis by an interdisciplinary team convened by USDA. These sensitive agricultural lands would likely have a need for water quality improvement substantially met by enrollment in the CRP. The impacts of expanding the program to include these lands would have long-term positive benefits for surface water quality by reducing soil erosion that deposits excess sediment in surface water, and filtering pollutants commonly associated with agriculture before entering surface water bodies.

Constructed Wetlands

Expanding the eligibility of the FWP to include constructed wetlands designed to remove contaminants, particularly nitrogen, from row crop drainage systems would encourage producers to create wetlands to retain and treat the drainage from their fields. Wetlands sited to intercept tile drainage have the potential to significantly reduce nitrate loads flowing into downstream surface water bodies such as streams, rivers, and lakes. One study estimated that a wetland that was two percent of the size of the watershed it drained (e.g., a five acre wetland constructed to receive drainage from 250 acres) would be able to remove 40 to 60 percent of the nitrogen load it received (Crumpton *et al.* 2006). Wetland buffers would provide additional benefits by filtering runoff around the wetland, prolonging the life of the wetland pool. Water resources benefits would be 10 to 15 years in duration or could extend benefits beyond the CRP contract, and would be contained within individual wetland complexes of up to 40 acres.

Short-term localized adverse effects on surface water quality could result during the construction of the wetlands and installation of the buffer conservation cover, which would remove vegetation and disturb soil that could increase sedimentation of nearby waters. BMPs would be implemented to minimize sediment or other pollutants from impacting surface water.

Under Section 404 of the CWA, the placement of fill or dredged material into waters of the U.S. requires a permit from the U.S. Army Corps of Engineers (USACE). Nationwide Permit (NWP) 40, Agricultural Activities, authorizes activities to improve agricultural production, such as the installation, placement, or construction of drainage tiles, ditches, or levees; mechanized land

clearing; land leveling; the relocation of existing serviceable drainage ditches constructed in waters of the U.S.; and similar activities in existing waters of the U.S., including wetlands. The CWA does not regulate the construction of wetlands developed to receive flow for a row crop agricultural drainage system designed to provide nitrogen removal and other wetland functions as long as the wetland is not constructed within a water of the U.S. If the proposed wetland would affect an existing water of the U.S., permitting under NWP 27, Stream and Wetland Restoration Activities, would likely be required. Individual States may also have regulations pertaining to stream or wetland restoration activities, and State requirements may apply to water bodies that do not meet the definition of waters of the U.S.

Aquaculture Ponds

The conversion of commercial aquaculture ponds into wetlands is not likely to have as great a benefit on surface water quality because the ponds are generally not situated to receive contaminated runoff from row crops. There could be short-term localized adverse impacts to surface water from the disturbance of soils by implementing pond conversion to wetlands and installation of a surrounding buffer zone; however, use of erosion control BMPs would minimize possible adverse effects.

Aquaculture can be water intensive; therefore, retiring the ponds from production would allow that water to be used elsewhere, even if that is for aquatic habitat in natural waterways. Aquaculture discharges also can cause water quality concerns related to suspended solids, nutrients (nitrogen and phosphorus), oxygen depletion, residual chemical additives and water temperature changes. Converting aquaculture ponds to wetlands would reduce these discharges.

In June 2004, EPA established regulations under Section 402 of the CWA to control the wastewater for concentrated aquatic animal production facilities (known as fish farms). The regulation applies to facilities that generate wastewater from their operations that produce at least 100,000 pounds a year in flow-through and recirculating systems and discharge that wastewater directly to waters of the U.S. at least 30 days a year. These facilities are used primarily to raise catfish, trout, salmon, hybrid striped bass and tilapia (EPA 2008b). BMPs to manage both inputs and output can reduce much of the pollution concerns associated with aquaculture facilities, which in turn reduces any water quality benefits that taking aquaculture ponds out of production may provide.

NWP 48, Existing Commercial Shellfish Aquaculture Activities, authorizes certain activities in the operation of existing commercial shellfish aquaculture that is performed in waters of the U.S. under the CWA. This permit does not specifically regulate the discontinuance of commercial aquaculture and the conversion of the ponds to wetlands; however, activities within waters of the U.S. would need to be coordinated with the USACE. NWP 27 could apply to the conversion of aquaculture ponds to wetlands if they are connected to waters of the U.S. Individual States may also have regulations pertaining to aquaculture ponds.

Flooded Prairie Wetlands

Inclusion of cropped land that was subject to the flooding of a prairie wetland would make small localized improvements to surface water by taking additional land out of production. This would lessen sedimentation and the volume of pollutants such as fertilizer and herbicides/pesticides both in the flooded area and the prairie wetland. By helping to keep pollutants, including sediments, out of the wetland, the flooded area helps extend the life of the wetland and its potential to improve surface water quality. Short-term localized impacts from the installation of a conservation cover for the flooded area and buffer zone would disturb soils and could increase sedimentation into nearby waters; however, implementation of BMPs would mitigate this occurrence. Benefits to water quality could be the duration of the contract (10 to 15 years), but could extend after the project.

Reverting flooded prairie wetlands back into wetlands would only require permitting under the CWA if there was a nexus between the flooded prairie wetland and waters of the U.S. Often, prairie wetlands are connected to the groundwater regime instead of surface waters; therefore, the nexus to waters of the U.S. does not exist. If there is a nexus, NWP 27, Stream and Wetland Restoration Activities, would apply to this activity.

Tree Thinning and Customary Forest Management Activities Related to Trees, Windbreaks, Shelterbelts and Wildlife Corridors

The Proposed Action Alternative would provide cost sharing for tree thinning and other customary forest management activities on tree-related CPs, as well as CPs for windbreaks, shelterbelts, and wildlife corridors. Additionally, a payment reduction will no longer be assessed if the CRP participant uses the generated refuse for commercial purposes. Under the current program, tree thinning, pruning and timber stand improvement are allowed but not cost shared. Commercial use of the refuse is only allowed if removal of the refuse enhances wildlife, reduces undesirable insect and disease infestation, and reduces wildfire hazard by removing excess fuels that would threaten the long-term viability of the conservation cover. Also, if the operator makes commercial use of the thinning refuse consistent with current policy, the operator must forfeit the annual rental payment for the affected acres for the year the forestry is conducted. Controlled tree thinning employing BMPs to prevent sedimentation of nearby surface waters minimizes the potential for negative impacts of the activity. The Proposed Action Alternative of cost-sharing to encourage tree thinning on eligible CRP land would not produce significant impacts to surface waters.

4.3.1.2 *Groundwater*

Lands of Special Significance Related to AGI Waivers

The Proposed Action Alternative would allow the USDA to waive the AGI limitations if environmentally sensitive lands of special significance were offered by a person determined otherwise to meet eligibility requirements, and the offered land itself also meets the eligibility requirements of CRP. The waiver would only be considered on a case-by-case basis. These sensitive agricultural lands would likely have a need for soil, water, vegetation, or wildlife habitat

improvement substantially met by enrollment in the CRP. The conversion of these agricultural lands to a conservation purpose would have long-term benefits for groundwater by reducing consumption of ground-pumped irrigation water, and lessening the potential for pollutants associated with agriculture from contaminating groundwater sources.

Constructed Wetlands

Constructed wetlands can beneficially affect groundwater by slowing runoff down and collecting water, thereby allowing recharge to the aquifer below. Wetlands also help to denitrify the water infiltrating down to the water table reducing potential nitrogen contamination in the aquifer. If nitrates or other pollutants are not removed in the wetlands, they could migrate down to the groundwater below. Planning for the wetlands would take into consideration any potential adverse effects to groundwater. The benefits of groundwater recharge would be the duration of the contract, 10 to 15 years, but are likely to last longer.

Aquaculture Ponds

As with the constructed wetlands, converting aquaculture ponds into wetlands would increase the amount of wetland acreage in the area. Wetlands slow runoff down, allowing more of it to infiltrate and recharge groundwater than would if it continued to flow. Wetlands also help to denitrify the water infiltrating down to the water table reducing potential nitrogen contamination in the aquifer. Retirement of aquaculture ponds that may pump groundwater to maximize an operation would save groundwater.

Flooded Prairie Wetlands

Inclusion of cropped land that was subject to the flooding of a prairie wetland may make small localized improvements to surface water by taking additional land out of production. This would lessen sedimentation and the volume of pollutants such as fertilizer and herbicides/pesticides both in the flooded area and the prairie wetland. By helping to keep pollutants, including sediments, out of the wetland, the flooded area helps extend the life of the wetland and increases its potential to improve groundwater quality in the long-term.

Tree Thinning and Customary Forest Management Activities Related to Trees, Windbreaks, Shelterbelts and Wildlife Corridors

The Proposed Action Alternative would provide cost sharing for tree thinning and other customary forest management activities on tree-related CPs, as well as CPs for windbreaks, shelterbelts, and wildlife corridors. Additionally, a payment reduction will no longer be assessed if the CRP participant uses the generated refuse for commercial purposes. Under the current program, tree thinning, pruning and timber stand improvement are allowed but not cost shared. Commercial use of the refuse is only allowed if removal of the refuse enhances wildlife, and reduces undesirable insect and disease infestation. Also, if the operator makes commercial use of the thinning refuse, the operator must forfeit the annual rental payment for the affected acres for the year the forestry is conducted.

The Proposed Action Alternative of providing cost sharing may induce tree thinning by creating an economic incentive, but the primary purpose must still be to benefit resources upon the land. As presented in Section 4.5 of this chapter, the economic impacts of the Proposed Action Alternative of providing cost share are neutral. The Proposed Action Alternative would therefore have neither beneficial nor adverse impacts on groundwater.

4.3.1.3 *Wetlands and Floodplains*

Environmentally Sensitive Lands of Special Significance Related to AGI Waivers

The Proposed Action Alternative would allow USDA to waive the AGI limitations if environmentally sensitive lands of special significance were offered by a person or entity determined otherwise to meet eligibility requirements, and the offered land itself also meets the eligibility requirements of CRP. The waiver would only be considered on a case-by-case basis by an interdisciplinary team convened by USDA. These agricultural lands would likely have a need for soil, water, vegetation, or wildlife habitat improvement substantially met by enrollment in the CRP. The conversion of these agricultural lands to a conservation purpose would have long-term benefits for wetlands by restoring existing wetlands, and installing conservation covers that reduce sedimentation and pollutants associated with agriculture entering wetlands.

Constructed Wetlands

Adding constructed wetlands to the FWP provides the same benefits to wetlands and floodplains as taking farmable wetlands out of production and restoring wetland hydrology and vegetation. Wetlands protect lands downstream by temporarily holding back floodwaters, which in turn reduces floodplain inundation, erosion and any human safety risks associated with flooding. Wetland drainage for agricultural use significantly decreases wetland storage volume, and this reduction has been linked to an increased frequency of downstream flooding (Gleason *et al*. 2008). Wetlands also retain sediment and contaminants from entering the floodplain.

Short-term localized adverse impacts to wetlands and floodplains could result during the construction of the wetlands and installation of the buffer conservation practices. Soils that are uncovered during vegetation removal and disturbed while establishing wetland hydrology could runoff into nearby waters; however, use of BMPs to minimize sediment or other pollutants from affecting wetlands and floodplains would reduce or eliminate any potential long-term adverse impacts.

Aquaculture Ponds

Converting aquaculture ponds to wetlands would increase the amount of wetland acreage and inclusion of an optional buffer zone could improve water quality. Establishing wetland hydrology and vegetation improves water quality and reduces runoff intensity and flooding. Wetlands are valuable resources for attenuating and storing water that would otherwise contribute to offsite or "downstream" flooding. Short-term localized adverse impacts on wetlands and floodplains could result during the pond conversion to wetlands and the installation of the buffer conservation cover through disturbing soils that may enter nearby waters; however, use of BMPs

to minimize sediment or other pollutants from affecting wetlands and floodplains would reduce or eliminate any potential adverse impacts.

Flooded Prairie Wetlands

Adding the areas of flooded prairie wetlands to be enrolled in the FWP prolongs the life of the wetlands and reduces maintenance requirements by trapping some of the suspended sediment before it reaches the wetland, prolonging the beneficial qualities of wetlands.

Wetlands and floodplains would also benefit from taking cropland out of production. Agricultural activities often accelerate soil erosion above natural baselines and require the use of large volumes of fertilizers and pesticides. Taking the land out of production would allow other groundcover to become established, which would reduce soil erosion and reduce or eliminates the need for fertilizers and pesticides.

Short-term localized adverse impacts on wetlands and floodplains could result during the restoration of wetland hydrology and vegetation and the installation of the buffer conservation cover by disturbing soils that may enter nearby waters; however, use of BMPs to minimize sediment or other pollutants from affecting wetlands and floodplains would reduce or eliminate any potential adverse impacts.

Tree Thinning and Customary Forest Management Activities Related to Trees, Windbreaks, Shelterbelts and Wildlife Corridors

The Proposed Action Alternative would provide cost sharing for tree thinning and other customary forest management activities on tree-related CPs, as well as CPs for windbreaks, shelterbelts, and wildlife corridors. Additionally, a payment reduction will no longer be assessed if the CRP participant uses the refuse generated for commercial purposes. Under the current program, tree thinning, pruning and timber stand improvement are allowed but not cost shared. Commercial use of the refuse is only allowed if removal of the refuse enhances wildlife, and reduces undesirable insect and disease infestation. Also, if the operator makes commercial use of the thinning refuse, the operator must forfeit the annual rental payment for the affected acres for the year the forestry is conducted. Controlled tree thinning employing BMPs to prevent sedimentation of nearby wetlands minimizes the potential for negative impacts. The Proposed Action Alternative of cost-sharing would not have any significant negative impacts on surface waters.

4.3.2 No Action Alternative

4.3.2.1 *Surface Water*

Environmentally Sensitive Lands of Special Significance Related to AGI Waivers

The No Action Alternative is continuation of the CRP as provided for in the 2002 Farm Bill. The current CRP has no provision for the Secretary to waive AGI requirements if environmentally sensitive lands of special significance were offered. Continuation of the program would therefore not expand CRP to such environmentally sensitive lands, however, since the Proposed Action

Alternative only offers waivers on a case-by-case basis, and the total number of acres authorized for enrollment are not changed by this provision, failure to expand the CRP to these lands is not likely to have a significant negative impact on surface water.

Constructed Wetlands

The benefits to surface water of restoring wetland hydrology and vegetation to farmable wetlands include improving water quality and reducing runoff intensity and flooding. Suspended sediments and contaminants in runoff are trapped, retained, and/or transformed through a variety of biological and chemical processes when they go through wetlands before they reach downstream water bodies. Constructed wetlands are currently eligible for the CRP, however, those designed specifically to reduce nitrogen and other pollutants from row crop agricultural fields are not authorized. Failure to include constructed wetlands designed to reduce nitrogen and other pollutants from tile drained agricultural fields would not meet a significant need to address this type of water quality impairment potentially caused by agriculture.

Aquaculture Ponds

Under the No Action Alternative, aquaculture ponds would not be eligible for enrollment in the FWP; therefore, they would likely not be taken out of production and converted to wetlands, and abandoned ponds that often have impaired water quality would not be converted to productive wetlands. The benefits to surface water from having these areas as additional wetlands would not occur.

Flooded Prairie Wetlands

Wetlands are valuable resources for attenuating and storing water that would otherwise contribute to offsite or "downstream" flooding. The wetland buffer areas prolong the life of the wetlands or reduce maintenance requirements by trapping some of the suspended sediment before it reaches the wetland, prolonging the beneficial qualities of wetlands. Surface water also benefits from taking cropland out of production. Agricultural activities often accelerate soil erosion above natural baselines and require the use of large volumes of fertilizers and pesticides. Taking the land out of production allows other ground cover to become establish, which would reduce soil erosion and reduce or eliminate the need for fertilizers and pesticides on these lands. By not enrolling flooded prairie wetlands, these benefits would not occur in these areas.

Tree Thinning and Customary Forest Management Activities Related to Trees, Windbreaks, Shelterbelts and Wildlife Corridors

The No Action Alternative would be a continuation of the program as it currently exists. Tree thinning and other customary forest management activities carried out as specified in a conservation plan designed for the particular lands enrolled, inclusive of BMPs to minimize impacts on surface waters, are currently authorized in CRP. A payment reduction will no longer be assessed if the CRP participant uses the refuse generated for commercial purposes. Under the current program, tree thinning, pruning and timber stand improvement are allowed but not cost shared. Commercial use of the refuse is only allowed if removal of the refuse enhances wildlife,

reduces undesirable insect and disease infestation, and reduces wildfire hazard by removing excess fuels that would threaten the long-term viability of the conservation cover. Commercial use would continue to be approved only if the forest refuse is removed from CRP acreage to enhance wildlife habitat, and reduce disease and insect infestations. The impacts to surface water quality under the current CRP have been assessed in the 2003 CRP PEIS.

4.3.2.2 *Groundwater*

Lands of Special Significance Related to AGI Waivers

The No Action Alternative is continuation of the CRP as provided for in the 2002 Farm Bill. The current CRP has no provision for the USDA to waive AGI requirements if lands of special environmental significance were offered. Continuation of the program would therefore not expand CRP to these lands; however, since the Proposed Action Alternative only offers waivers on a case-by-case basis, and the total number of acres authorized for enrollment is not changed by this provision, failure to expand the CRP to these lands is not likely to have a negative impact on groundwater.

Constructed Wetlands

Constructed wetlands are currently authorized under CRP, but those that specifically address nitrogen and other pollutants from row crop agricultural fields are not authorized. Treating agricultural drainage can have significant benefits for groundwater by preventing pollutants from contaminating groundwater. As with other types of constructed wetlands, those designed to filter agricultural drainage also offer benefits for groundwater recharge. Under the No Action Alternative, the benefits to groundwater quality or aquifer recharge that would occur if wetlands were constructed to receive agricultural drainage water would not exist.

Aquaculture Ponds

Under the current program, there would be no incentive for producers to convert even marginally productive aquaculture ponds to wetlands; therefore, the benefits to groundwater from their conversion would not be realized. Further, aquaculture ponds that are abandoned often have impaired water quality that could filter into groundwater.

Flooded Prairie Wetlands

The benefits to aquifers within the prairie region from enrolling the additional land from flooded prairie wetlands would not occur under the No Action Alternative. These wetlands contribute to groundwater recharge.

Tree Thinning and Customary Forest Management Activities Related to Trees, Windbreaks, Shelterbelts and Wildlife Corridors

The No Action Alternative is a continuation of the current program. Tree thinning and other customary forest management activities carried out as specified in a conservation plan designed for the particular lands enrolled, inclusive of BMPs to minimize impacts on groundwater, are currently authorized in CRP. As part of the conservation plan development, a site-specific

environmental evaluation is completed that identifies possible impacts to groundwater that may be affected by the proposed CP, and steps taken to avoid, minimize, or mitigate negative impacts. The impacts of the current program on groundwater were previously assessed in the 2003 CRP PEIS (USDA FSA 2003).

4.3.2.3 *Wetlands and Floodplains*

Environmentally Sensitive Lands of Special Significance Related to AGI Waivers

The No Action Alternative is continuation of the CRP as provided for in the 2002 Farm Bill. The current CRP has no provision for USDA to waive AGI requirements if environmentally sensitive lands of special significance were offered. Continuation of the program would therefore not expand CRP to environmentally sensitive lands, however, since the Proposed Action Alternative only offers waivers on a case-by-case basis, and the total number of acres authorized for enrollment are not changed by this provision, failure to expand the CRP to these lands is not likely to have a negative impact on wetlands.

Constructed Wetlands

Under the current FWP, wetlands restored under CP27 would continue to offer flood abatement functions and filtering out pollutants before reaching the floodplain; however, the added benefits of filtering row crop agriculture drainage water of sediment and pollutants would not be realized.

Aquaculture Ponds

As with constructed wetlands, by not providing incentives to convert aquaculture ponds to wetlands under the FWP, the benefits of preserving additional wetlands, and especially increasing water quality of wetlands, in an area would be less likely.

Flooded Prairie Wetlands

By not adding areas of flooded prairie wetlands in the FWP, the wetlands in the program will not benefit from the land's filtering action that would have prolonged the life of the wetlands or reduce maintenance requirements by trapping some of the suspended sediment before it reaches the wetland.

Tree Thinning and Customary Forest Management Activities Related to Trees, Windbreaks, Shelterbelts and Wildlife Corridors

The No Action Alternative is continuation of the current program. Tree thinning and other customary forest management activities carried out as specified in a conservation plan designed for the particular lands enrolled, inclusive of BMPs to minimize impacts on wetlands, are currently authorized in CRP. As part of the conservation plan development, a site-specific environmental evaluation is completed that identifies possible impacts to wetlands and floodplains that may be affected by the proposed CP, and steps taken to avoid, minimize, or mitigate negative impacts. The impacts of the current program on wetlands and floodplains have been previously assessed in the 2003 CRP PEIS (USDA FSA 2003).

4.4 SOILS

Impacts to soil resources would be considered significant if a proposed action resulted in increased erosion and sedimentation or affected unique soil conditions.

4.4.1 Proposed Action Alternative

Environmentally Sensitive Lands of Special Significance Related to AGI Waivers

The Proposed Action Alternative allows for the Secretary to waive AGI limitations as long as the environmentally sensitive lands of special significance are being offered by persons or entities that meet eligibility requirements and the land itself is also eligible under the CRP. Waivers are considered on a case-by-case basis by an interdisciplinary team convened by USDA. Lands of special significance are likely to have some critical resource value including highly erodible soils. The impacts of expanding the program to include these lands would have long-term positive benefits for soil. CRP takes highly erodible agricultural lands out of production and establishes conservation covers that reduce erosion, and increase organic content of soils.

Under the Proposed Action, the overall amount of acreage that can be enrolled nationally remains to be up to one million acres total, with a maximum of 200,000 acres per State, determined at the discretion of the Secretary of Agriculture. The maximum acres providing soil benefits for restoration of farmable wetlands would not change. Including upland buffers in the restoration of farmed or converted wetlands benefits soils by providing vegetative cover that stabilizes soils and reduces potential erosion. Restoration of wetland hydrology changes soil chemistry by inundating or saturating the soils, creating anaerobic soil conditions. Under FWP, every restored wetland also requires a vegetative buffer at a minimum of 30 feet wide to protect the wetland from sediment, nutrients, and pollutants from agricultural runoff. These buffers provide additional soil stabilization and reduce erosion within the buffer. Establishment of vegetation that reduces soil erosion leads to increased organic content of soil, thereby increasing carbon sequestration. Soil benefits would be 10 to 15 years in duration, and would be contained within individual wetland complexes of up to 40 acres. The benefits of the current FWP program on soils were evaluated in the 2003 CRP PEIS (USDA FSA 2003).

Constructed Wetlands

Expanding the eligibility of the FWP to include constructed wetlands designed to remove contaminants, particularly nitrogen, from row crop drainage systems would encourage producers to create wetlands to retain and treat the drainage from their fields. These wetlands would not necessarily reduce the top soil eroding from the crop fields; however, they would restrict the sediments from entering nearby water bodies. There would be no adverse affect to soils from these constructed wetlands, except for the opportunity costs of enrolling wetlands constructed for receiving agricultural drainage rather than other farmable wetlands that would provide soil stabilization and erosion reduction.

Aquaculture Ponds

The conversion of commercial aquaculture ponds into wetlands is also not likely to have a large benefit to soils. Aquaculture ponds are not areas experiencing soil erosion problems; therefore, converting them to wetlands would not reduce soil erosion.

Flooded Prairie Wetlands

Inclusion of cropped land that was subject to the flooding of a prairie wetland would have a beneficial effect on soils. Under the FWP, every restored wetland also requires a vegetative buffer at a minimum of 30 feet wide to protect the wetland from sediment, nutrients, and pollutants from agricultural runoff. These buffers provide additional soil stabilization and reduce erosion within the buffer. Adding flooded wetlands to the FWP would take more land out of production, consequently improving the vegetative cover that stabilizes soil.

Tree Thinning and Customary Forest Management Activities Related to Trees, Windbreaks, Shelterbelts and Wildlife Corridors

The Proposed Action Alternative would provide cost sharing for tree thinning and other customary forest management activities on tree-related CPs, as well as CPs for windbreaks, shelterbelts, and wildlife corridors. Additionally, a payment reduction will no longer be assessed if the CRP participant uses the refuse generated for commercial purposes. Under the current program, tree thinning, pruning and timber stand improvement are allowed but not cost shared. Commercial use of the refuse is only allowed if removal of the refuse enhances wildlife, and reduces undesirable insect and disease infestation. Also, if the operator makes commercial use of the thinning refuse, the operator must forfeit the annual rental payment for the affected acres for the year the forestry is conducted. Controlled tree thinning employing BMPs to prevent soil erosion and compaction reduces the potential for impacts. Therefore, the Proposed Action Alternative of providing cost share would not have significant negative impacts on soils.

4.4.2 No Action Alternative

Environmentally Sensitive Lands of Special Significance Related to AGI Waivers

The No Action Alternative is continuation of the CRP as provided for in the 2002 Farm Bill. The current CRP has no provision for USDA to waive AGI requirements if environmentally sensitive lands of special significance were offered. Continuation of the program would therefore not expand CRP to environmentally sensitive lands, however, since the Proposed Action Alternative only offers waivers on a case-by-case basis, and the total number of acres authorized for enrollment are not changed by this provision, failure to expand the CRP to these lands is not likely to have a negative impact on soil conservation or quality.

Constructed Wetlands, Aquaculture Ponds and Flooded Prairie Wetlands

Under the current FWP, a total of 182,125 acres have been enrolled within 14 States. The majority of acreage enrolled is in Iowa (USDA FSA 2008b). The current program is open to all States up to one million acres total or 200,000 acres per State; therefore, even under the current

program, there is capacity to increase enrollment. The benefits of the current FWP program on soils were evaluated in the 2003 CRP PEIS.

There are no substantial benefits to soils by the enrollment of wetlands constructed to receive row crop drainage water or aquaculture ponds; therefore, there are no adverse effects on soils if those new categories of eligible lands are not included in the FWP. There are benefits to soils from the inclusion of areas of flooded prairie wetlands, which would not be realized under the No Action Alternative.

Tree Thinning and Customary Forest Management Activities Related to Trees, Windbreaks, Shelterbelts and Wildlife Corridors

The No Action Alternative would be a continuation of the program as it currently exists. Tree thinning and other customary forest management activities carried out as specified in a conservation plan designed for the particular lands enrolled, inclusive of BMPs to minimize negative impacts on soils, are currently authorized in CRP. Tree thinning and customary forest management activities for improving resource conditions on the land are currently allowed, but not cost shared. If the CRP participant makes commercial use of the forest refuse resulting from tree thinning and customary forestry activities, they will continue to forego the annual rental payment for the affected acreage in the year the forestry activity is conducted. Commercial use would continue to be approved only if the forest refuse is removed from CRP acreage does not increase soil erosion, enhances wildlife habitat, and reduces disease and insect infestations. The impacts to soil under the current CRP have been assessed in the 2003 CRP PEIS (USDA FSA 2003).

4.5 SOCIOECONOMIC RESOURCES

For this analysis, socioeconomics impacts would be considered significant if a large percentage of gross income from farming operations was lost due to program changes or if the farming operations were unrecoverable due to financial burdens wholly borne by the farm operators due to program changes.

4.5.1 Proposed Action Alternative

Environmentally Sensitive Lands of Special Significance Related to AGI Waivers

Environmentally sensitive lands of special significance would be a small portion of the total acreage allotted for the entire CRP. These lands would provide societal benefits similar to those previously described in the 2003 PEIS (USDA FSA 2003). These lands due to their nature could provide a greater return for societal investment based on their special significance or potential for conservation related benefits. These lands would be located throughout the United States, thereby dispersing the overall effects to the society at large, while providing greater regional or localized benefits. The Proposed Action sets forth provisions that, should an individual's non-farm AGI cap be in excess of $1,000,000 and the percentage of AGI derived from agriculture be less than 66.66 percent, would make that individual ineligible to participate in CRP. The proportion of the agricultural population that meets or exceeds the enacted AGI cap is relatively small (estimated to

be less than 0.15 percent); therefore, enacting the AGI limitations would not result in adverse socio-economic effects. Since the percentage of the population exceeding the AGI limitations is small, waiving the AGI limitation on environmentally sensitive agricultural lands of special significance would not result in adverse socioeconomic effects in the individual farm households or society in general due to the extremely small population size being considered.

Under the Proposed Action, the overall amount of acreage that can be enrolled and the maximum allowable acreage nationally continues to be up to one million acres, but the total acres per State may increase to 200,000 at the discretion of the Secretary of Agriculture. Currently (May 2008), only 182,125 acres have been enrolled in the FWP within 14 States. The Proposed Action expands the eligibility requirements so that the FWP can be better utilized. The Proposed Action would change the size of wetland pools and buffers eligible for enrollment. In the case of aquaculture pond conversion, the 2008 Farm Bill allows the Secretary, in consultation with the State Technical Committee, to determine the size of wetland and associated buffer that can be converted from aquaculture production. The proposed action removes the payment limitation to five wetland acres under the existing program.

Constructed Wetlands

As mentioned previously, approximately 41 million acres of croplands are drained throughout the U.S, and they are primarily concentrated in the Cornbelt region. Wetland pools constructed to retain/detain flows from these drained croplands would likely be fairly small (approximately 10 acres) and would not have a large effect on the amount of cropland in production. The practice of using wetlands and associated upland buffers for the water quality functions they provide would create an overall net societal benefit associated with improved water quality and increased wildlife habitat. Since these areas would not require the retirement of active cropland and would be eligible for cost-share, there would be no anticipated negative effect to the farm-level household income or population. As such, inclusion of these acres would provide a neutral to net positive socioeconomic effect.

Aquaculture Ponds

In 2005, there were approximately 280,000 acres of aquaculture ponds with an average size of 5.8 acres per pond (USDA NASS 2006). Approximately 90.6 percent of the acreage of aquaculture ponds is located in five States (Mississippi [36.2 percent], Arkansas [21.6 percent], Minnesota [14.5 percent], Louisiana [9.4 percent], and Alabama [8.9 percent]). Only Minnesota currently has acreage enrolled in the FWP. The inclusion of aquaculture ponds provides a mechanism to promote the FWP in the Gulf Coast States and elsewhere. As mentioned previously, aquaculture sales within the U.S. accounted for approximately $1.1 billion in 2005 and generated approximately $168.7 million in farm employment expenses. The overall trend within aquaculture is positive for the value of sales and the number of farms between 1998 and 2005. Within the Gulf Coast States (Texas, Louisiana, Mississippi, Alabama, and Florida), aquaculture provides 4,708 employment positions (44.8 percent of total aquaculture employment positions) and $64.7 million in employment expenses (38.4 percent of total employment expenses).

Additionally, these States accounted for 157,737 acres of the aquaculture ponds (56.3 percent of total aquaculture pond acreage).

Individual producers are not likely to choose to enroll their aquaculture ponds into the FWP program unless the return from the annual rental rate was essentially equal to the return from producing the aquaculture products. Given the increasing value of aquaculture products, only a small percentage of producers would choose to enroll this eligible acreage into the FWP. For example, if 100,000 acres of aquaculture ponds were enrolled from the State of Mississippi, then most aquaculture farms (401 farms) would forego the sales generated from aquaculture activities in the State ($249.7 million in 2005) (Mississippi is used for an example because all but two of Mississippi's aquaculture farms have ponds and the State has just over 100,000 acres in ponds). In Mississippi, each farm receives an average of approximately $619,613 in aquaculture sales. If each farm enrolled all of their pond acreage in the FWP, they would receive an estimated $29,520 per year in rental payment (assuming a national average FWP rental payment of $117.14 per acre with 252 eligible acres per farm) (USDA ERS 2008, USDA FSA 2008b). Although FWP payments would be based on local rates, not national, it would be unlikely that the FWP payments for average aquaculture farms would exceed average aquaculture sales in Mississippi. A producer is only likely to enroll low-producing ponds, or noneconomic factors would need to influence the decision to convert aquaculture ponds to wetlands.

Flooded Prairie Wetlands

The inclusion of flooded prairie wetlands would be a relatively small amount of acreage throughout the applicable region. Currently, the 182,000 acres of enrolled FWP wetland practices are primarily located within the Great Plains. The inclusion of these flooded wetlands would provide additional buffer areas within this general region, which would provide societal benefits, similar to the constructed wetlands.

Tree Thinning and Customary Forest Management Activities Related to Trees, Windbreaks, Shelterbelts and Wildlife Corridors

Under the Proposed Action Alternative, tree thinning would be added as a cost share practice to acceptable forestry management activities at a rate of 50 percent at a time period of not less than two years and no more than four years after planting new stands or thinning existing stands. It is anticipated that implementing the Proposed Action Alternative would result in positive net benefits to society based on (1) economic benefits derived by the producer/operator and (2) non-economic intrinsic benefits associated with improved wildlife habitat, reduction of fire severity potential (live material versus standing or dropped dry dead), carbon sequestration, and other environmental benefits associated with forestry plantings and management. The economic benefits for the producer/operator include the cost share of the tree thinning activity, excluding the costs of associated infrastructure to remove the forest refuse derived from the management activities. The non-economic benefits associated with the activities include the benefits associated with game and non-game wildlife species from increased edge area, increased sunlight through the overstory canopy layer encouraging mixed use of the forest by a variety of wildlife and other wildlife habitat benefits effects described more fully in the affected lands section of this PEA.

The reduction of forest fire severity through the tree thinning activities provides longer term benefits, such as improved water quality, carbon sequestration, and longevity of the forest stands. These benefits accrue locally and regionally, as well as, nationally for the intrinsic existence of these landscapes.

If based on an economically rational producer/operator tree thinning would be used no more than other forestry management practices that have cost-share components, since there would not be a cost-share payment for the associated infrastructure to remove the refuse from tree thinning. The operator would choose forestry management practices based on the expected economic return from those activities after his/her costs. Tree thinning could be considered a relatively higher cost management option due to the additional costs for infrastructure spread over the allotted time tree thinning practices would be allowed. The producer would choose to remove forest refuse generated from tree thinning if the value of the commercially viable refuse would off-set the costs of infrastructure and the costs of collecting, marketing and selling of that product.

Overall, implementing the Proposed Action would generate positive or neutral socioeconomic benefits at the societal and regional/local scale. Providing cost share with no rental rate reduction would result in private benefits in the limited cases where the returns are greater than the expenses for making commercial use of the refuse generated. The Proposed Action is not likely to result in significant negative societal impacts because the affected acreage is relatively small. One area that would receive primary benefits from implementing the Proposed Action, which increases the value of wildlife habitats, would be wildlife recreation and agri-tourism. The USFWS found from the 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation that there were 87.5 million participants that had $122.3 billion in expenditures. Between 2001 and 2006, the USFWS found that wildlife associated recreation participants increased approximately 6.3 percent with an approximate decline in expenditures of 0.9 percent (USFWS 2006). It was found in 2007 by Brown and Reeder that approximately 52,000 farms in 2004 reported income from recreation with a total income from these activities of approximately $955 million (Brown and Reeder 2007). Wildlife and agri-tourism activities provide a regional source of additional income for farm households, thereby generating regional and localized direct economic benefits.

4.5.2 No Action Alternative

Under the No Action Alternative, current FWP components would remain in effect. Currently, there are approximately 182,000 acres of wetlands and buffers enrolled in the FWP (18 percent of the total CRP allotment). The FWP was fully analyzed in its current form in the 2003 PEIS for the CRP (USDA FSA 2003). The PEIS did not find a substantial negative effect from the FWP to the general society; however, by selecting the No Action Alternative, society would forego the benefits associated with the inclusion of the above-mentioned eligible acres types.

Selecting the No Action Alternative would continue the select CRP provisions in their current form. The 2003 PEIS found that the CRP provided societal socioeconomic net benefits. However, selecting this alternative would forego the additional societal socioeconomic benefits that would be generated from the new provisions. The new provisions would include new land eligibility

under the CRP total acreage limitation that could provide a higher net return for CPs. Additionally, the focus on wildlife benefits associated with the new provisions would provide additional new benefits to passive and non-passive forms of outdoor recreation, which would be somewhat less under the existing CRP provisions.

4.6 OTHER PROTECTED RESOURCES

Impacts to other protected lands would be significant if an action interfered with the ability of the agency managing protected lands to carry out the conservation, recreation, or research mission of those lands. For example, an action that would interfere with public access or the aesthetic experience at a National Park would be considered a significant impact.

4.6.1 Proposed Action Alternative

Environmentally Sensitive Lands of Special Significance Related to AGI Waivers

The Proposed Action Alternative would allow USDA to waive the AGI limitations if environmentally sensitive lands of special significance were offered by a person or entity determined otherwise to meet eligibility requirements, and the offered land itself also meets the eligibility requirements of CRP. The waiver would be considered on a case-by-case basis by an interdisciplinary team assembled by USDA. These agricultural lands would likely have a need for soil, water quality, or biological improvement substantially met by enrollment in the CRP. The impacts of expanding the program to include these lands would have long-term positive effects on vegetation by reducing soil erosion and improving water quality. Long-term benefits for wildlife consist of providing habitat that otherwise would not exist, or improving such habitat. These lands may be adjacent to other protected resources (i.e., Wildlife Refuges, Wilderness), thereby enhancing these existing lands by extending habitat or providing an additional buffer between the other protected lands and more incompatible land uses. CPs as specified in conservation plans developed for the particular lands enrolled in CRP would still likely be required, and would include BMPs that minimize the potential for adversely impacting adjacent lands during installation and management of conservation covers. Activities that may have temporary negative impacts on adjacent lands would be noise from employing machinery to prepare land for installation of a vegetative cover. The noise produced would not be different from machinery used on actively farmed lands, and its duration would be more limited.

Constructed Wetlands, Aquaculture Ponds and Flooded Prairie Wetlands

Under the Proposed Action, the overall amount of acreage that can be enrolled nationally remains to be up to one million acres total, with a maximum of 200,000 acres per State, determined by USDA. The maximum acres providing benefits for restoration of farmable wetlands would not change. As of May 2008, only 182,125 acres have been enrolled in the FWP within 14 States. The Proposed Action expands the eligibility requirements so that the FWP can be better utilized.

Implementation of the Proposed Action would result in expanding the eligibility requirements for enrollment in the FWP to include lands that are constructed to receive row crop agriculture drainage, aquaculture ponds, or flooded prairie wetlands. No negative impacts to other protected

lands would be expected to result from this action. Wetland construction or restoration would positively affect natural lands set aside for conservation, research or recreation by complementing and enhancing their missions.

Tree Thinning and Customary Forest Management Activities Related to Trees, Windbreaks, Shelterbelts and Wildlife Corridors

The Proposed Action Alternative would provide cost sharing for tree thinning and other customary forest management activities on tree-related CPs, as well as CPs for windbreaks, shelterbelts, and wildlife corridors. Additionally, a payment reduction will no longer be assessed if the CRP participant uses the refuse generated for commercial purposes. These activities are currently considered unreimbursed maintenance, or in the case of commercial use, the annual rental payment is forfeited. The Proposed Action Alternative, then, has little potential to have new or significant impacts on other protected resource lands adjacent to CRP lands.

4.6.2 No Action Alternative

Environmentally Sensitive Lands of Special Significance Related to AGI Waivers

The No Action Alternative is continuation of the CRP as provided for in the 2002 Farm Bill. The current CRP has no provision for USDA to waive AGI requirements if environmentally sensitive lands of special significance were offered. Continuation of the program would therefore not expand CRP to these environmentally sensitive lands, however, since the Proposed Action Alternative only offers waivers on a case-by-case basis, and the total number of acres authorized for enrollment are not changed by this provision, failure to expand the CRP to these lands is not likely to have a significant negative impact on other protected lands.

Constructed Wetlands, Aquaculture Ponds and Flooded Prairie Wetlands

Under the current FWP, only 182,125 acres of the maximum enrollment total of one million acres have been enrolled; therefore, even under the current plan there is capacity to increase FWP enrollment. Not authorizing the eligibility of lands that are constructed to receive row crop agriculture drainage, aquaculture ponds, or flooded prairie wetlands would not change the maximum acreage enrollment; therefore, the positive benefits to natural lands set aside for conservation, research or recreation under other federal programs still would be possible. No negative impacts to other protected lands would be expected to result from the No Action Alternative.

Tree Thinning and Customary Forest Management Activities Related to Trees, Windbreaks, Shelterbelts and Wildlife Corridors

Tree thinning and other customary forest management activities carried out as specified in a conservation plan designed for the particular lands enrolled, inclusive of BMPs to minimize impacts on environmental and cultural resources, are currently authorized by the CRP. As part of the conservation plan development, a site-specific environmental evaluation will be completed that identifies environmental and cultural resources that may be affected by the proposed CP including tree thinning and activities to improve resources on the CRP lands, and steps taken to

avoid, minimize, or mitigate effects. The No Action Alternative would continue to allow tree thinning and other customary forest management activities as unreimbursed maintenance or as mid-contract management that is cost shared. Making commercial use of the refuse would cause operators to continue to forfeit their annual rental payment for the year such use occurs. This has little potential to positively or negatively impact adjacent other protected resources lands.

This Page Intentionally Blank

5.0 CUMULATIVE IMPACTS

5.1 DEFINITION

The cumulative impacts analysis in this PEA considers the potential environmental effects resulting from "the incremental impacts of the action when added to other past, present and reasonably foreseeable actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7). According to CEQ guidance, the first steps in assessing cumulative effects involve defining the scope of the other actions and their interrelationship with the Proposed Action. The scope must consider geographic and temporal overlaps affected by the Proposed Action and other programs or projects. It must also evaluate the nature of interactions among these actions.

Cumulative effects most likely arise when a relationship exists between a Proposed Action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in proximity to the Proposed Action would be expected to have more potential for a relationship than those more geographically separated. Similarly, actions that coincide, even partially, in time tend to have potential for cumulative effects.

5.2 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

In this PEA, the affected environment includes the lands eligible for enrollment in the current CRP and the selective lands encompassed by the new eligibility categories of the 2008 Farm Bill within the U.S. and its territories. For the purposes of this analysis, other USDA federal conservation programs pertaining to agricultural lands are the primary sources of information used in identifying past, present, and reasonably foreseeable actions.

Table 5.2-1 describes other USDA programs that promote the restoration or creation of wetlands from agricultural lands and summarizes the programs with other Federal conservation programs affecting agricultural lands.

Table 5.2-1. Other Federal Assistance Programs

Program	Summary
NRCS Agricultural Management Assistance	This program provides cost share assistance to agricultural producers to voluntarily address issues such as water management, water quality, and erosion control by incorporating conservation into their farming operations. Conservation practices allow the producer to construct or improve water management and irrigation structures; plant trees for windbreaks or to improve water quality; and mitigate risk through production diversification or resource conservation practices, including soil erosion control, integrated pest management, or transition to organic farming.

Table 5.2-1. Other Federal Assistance Programs (cont'd.)

Program	Summary
NRCS Conservation Security Program	The program provides financial and technical assistance to promote the conservation and improvement of soil, water, air, energy, plant and animal life, and other conservation purposes on Tribal and private working lands. Lands included under this program include working cropland, grassland, prairie land, improved pasture, and range land. Also included is forested land that is an incidental part of an agriculture operation.
NRCS Emergency Watershed Protection Program (Recovery)	Undertakes emergency measures, which includes purchasing flood plain easements, for runoff retardation and soil erosion prevention. This is done to safeguard lives and property from floods, droughts, and the effects of erosion on a watershed whenever fire, flood or other natural occurrences cause sudden impairment to the watershed.
NRCS Environmental Quality Incentives Program	The objectives of this program are to reduce non-point source pollution, groundwater contamination, point-source pollution, and air emissions that contribute to air impairment, soil erosion and sedimentation, as well as conserve ground and surface water resources, and promote at-risk species habitat conservation.
NRCS Forest Incentives Program	Provides technical assistance and cost-sharing of up to 65 percent for planting trees and timber stand improvements on private forest lands which are not larger than 1,000 acres.
NRCS Healthy Forests Reserve Program	Restores and enhances forest ecosystems to promote the recovery of threatened and endangered species, improve biodiversity and enhance carbon sequestration.

5.3 CUMULATIVE IMPACTS MATRIX

All of the conservation programs offered through USDA are voluntary and enrollment cannot be predicted. The incremental contribution of impacts of the Proposed Action, when considered in combination with other past, present, and reasonably foreseeable actions, are expected to result in positive impacts to biological, water, soil, socioeconomic and other protected resources in the current and proposed CRP areas. Producers cannot apply for assistance for the same activity on the same land under multiple programs, reducing the potential for abuse of government funds. Short-term negative impacts to biological, water, soil and other resources may occur during establishment of CPs.

5.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires that environmental analysis include identification of any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources has on future generations. Irreversible effects primarily result from the use or destruction of a specific resource that cannot be replaced within a reasonable time frame.

Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action. For the Proposed Action, no irreversible or irretrievable resource commitments are expected. Table 5.4-1 summarizes cumulative effects.

Table 5.4-1. Cumulative Impacts Matrix

Resource	Past and Present Actions	Proposed Action	Future Actions	Cumulative Effects
Biological Resources	Long-term benefits to vegetation would be achieved by reducing soil erosion and improving water quality, thereby ensuring long-term viability of the conservation cover. Past or present actions that create or improve habitat for wildlife and threatened and endangered species would be achieved through taking lands out of agricultural production and installing conservation covers, establishing wetlands or tree-thinning.	Long-term positive benefits to vegetation, wildlife and protected species are expected to be similar to those described in past and present actions.	Continued enrollment of farmland in programs that would create or restore habitats is expected to benefit biological resources.	Long-term benefits to biological resources are expected to result from CRP, similar USDA programs and other State and federal conservation programs that aim to restore habitats and improve water quality.
Water Resources	Beneficial impacts to water resources are derived from taking land out of production and restoring it as wetlands or buffer areas, which improves surface water quality and stores runoff to reduce flooding. The buffer areas required as part of the FWP prolong the life of the restored wetlands.	Long-term positive impacts to water resources are expected to result to from the Proposed Action from reducing runoff of agricultural chemicals, sediment, and excess nutrients; consuming less groundwater, reducing use of agricultural chemicals that can pollute groundwater by conversion of lands to conservation; and by creating or restoring wetland natural hydrology, ensuring their continued functionality and value.	Continued enrollment of land in conservation programs is expected to have positive impacts to water resources from activities similar to those described for the Proposed Action.	Positive long-term cumulative impacts to surface water, ground water, wetlands and floodplains are expected to result from activities similar to those actions described in the Proposed Action.
Soils	Long-term beneficial impacts to soils resources are expected to result from conversion of agricultural lands to conservation by reducing soil erosion and improving soil organic content.	Long-term beneficial impacts to soils are expected to have positive impacts similar to those actions described in past and present actions.	Continued enrollment of farmland in conservation programs is expected to have positive impacts similar to those actions described for past and present actions.	Positive long-term impacts to soils are expected to be similar to those actions described for past and present actions and other known and reasonably foreseeable actions.

Table 5.4-1. Cumulative Impacts Matrix (cont'd.)

Resource	Past and Present Actions	Proposed Action	Future Actions	Cumulative Effects
Socio-economics	Long-term positive impacts to socioeconomic resources are expected to result from conservation programs including financial incentives for conservation, conservation programs that contribute to recreation economies, and societal benefits of reduced soil erosion, improved water quality, and creating wildlife habitat. Economic and non-economic positive net benefits may be derived from tree thinning. Assessment of a payment reduction, if commercial use is made of the refuse generated, preserves funding for conservation purposes.	Long-term positive impacts to society are expected to result by the Proposed Action expanding types of land eligible for enrollment in CRP achieved by providing or improving wildlife habitat that also contributes to recreation economies, reducing soil erosion, and improving water quality. Continuing to offer financial incentives for conservation through cost share and annual rental payments benefits socioeconomic resources. Providing cost sharing for tree thinning and not assessing a payment reduction for commercial use of refuse encourages maintenance of the conservation cover to meet its intended purpose.	Continued enrollments of highly erodible farmland in programs which create or restore wildlife habitats and wetlands, reduce soil erosion, and improve water quality are expected to have long-term benefits for society.	Positive long-term impacts to socioeconomic resources are expected to have positive impacts similar to those actions described for past and present actions and other known and reasonably foreseeable actions.
Other Protected Resources	Beneficial impacts to other protected resources are expected to result from programs that restore or create wetlands or vegetation and wildlife habitat.	Long-term positive impacts to other protected resources are expected to result by providing or improving wildlife habitat, reducing soil erosion, improving water quality, enhancing the existing protected resource lands by extending habitat, and reducing conversion of agricultural lands to uses more incompatible to other protected resources.	Continued enrollment of land in programs aimed at restoring or creating wetlands or wildlife habitat is expected to benefit other protected resources by enrolling conservation lands near protected resources.	Positive long-term impacts to other protected resources are expected to result from activities similar to those actions described in the Proposed Action and other known and reasonably foreseeable actions.

This Page Intentionally Blank

6.0 MITIGATION

6.1 INTRODUCTION

The purpose of mitigation is to reduce or eliminate potential negative impacts of the Proposed Action on affected resources. CEQ regulations (40 CFR 1508.20) state that mitigation includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

6.2 ROLES AND RESPONSIBILITIES

CEQ regulations state that all relevant reasonable mitigation measures that could alleviate the environmental effects of a Proposed Action must be identified, even if they are outside the jurisdiction of the lead agency or the cooperating agencies. This serves to alert agencies or officials who can implement these extra measures, and will encourage them to do so. The lead agency for this Proposed Action is FSA.

6.3 MITIGATION RECOMMENDATIONS

The negative impacts associated with implementation of the Proposed Action are expected to be temporary and localized in nature, and they would occur primarily during preparation of the land for installation of the constructed wetland and conservation covers. Prior to execution of the CRP contract, NRCS would complete a site-specific environmental evaluation that would reveal any protected resources on or adjacent to the proposed program lands. When sensitive resources, such as nesting birds or cultural resources are present or in the vicinity of the proposed lands, consultation with the appropriate regulatory agency would occur. Specific mitigation measures necessary to reduce or eliminate the potential localized negative impacts to those sensitive resources would be identified. If the environmental evaluation identifies that species or critical habitat protected under ESA are potentially present, and the proposed conservation activity on the land is determined to have negative impacts, it is not likely the land would be eligible for that activity. Activities may result in temporary localized impacts to biological and water resources during preparation of the land for installing a CP; however, they may be mitigated through the implementation of BMPs like the installation of silt fencing, vegetative filter strips, or retention basins.

This Page Intentionally Blank

7.0 LIST OF PREPARERS

Name	Organization	Experience	Project Role
Tony Cecchi, MBA ***Program Manager***	Geo-Marine, Inc.	18 years	Quality Assurance
Susan Miller, MA ***Project Manager***	Geo-Marine, Inc.	19 years	Project Management, Chapters 1 and 2, Biological Resources, Cumulative Impacts, Mitigation
Karen Johnson, MS ***Principal Author***	Geo-Marine, Inc.	21 years	Chapters 1 and 2, Water Resources, Cumulative Impacts
Carol She', MA ***NEPA Analyst***	Geo-Marine, Inc.	1 year	Data Tables, Affected Environment, Cumulative Effects
Brian Bishop, MS ***Environmental Scientist***	Geo-Marine, Inc.	3 years	Data Tables, Soils, References
Marlin Sawyer, MS ***Environmental Scientist***	Geo-Marine, Inc.	30 years	Soil Resources, Biological Resources
Rae Lynn Schneider, MPP ***Economist***	Integrated Environmental Solutions	8 years	Socioeconomics
Dave Brown ***Document Manager***	Geo-Marine, Inc.	26 years	Document formatting and production

This Page Intentionally Blank

8.0 PERSONS AND AGENCIES CONTACTED

Name	Organization
Robert Stephenson	USDA/FSA Director Conservation and Environmental Programs Division Washington, D.C.
Mike Linsenbigler	USDA/FSA Deputy Director Conservation and Environmental Programs Division Washington, D.C.
Martin Lowenfish	USDA/FSA Associate Director Conservation and Environmental Programs Division Washington, D.C.
Matthew Ponish	USDA/FSA National Environmental Compliance Manager Washington, D.C.
Bennett Horter	USDA/FSA Federal Preservation Officer Washington, D.C.
Beverly Preston	USDA/FSA Conservation Reserve Program Manager Washington, D.C.
John Carter	USDA/FSA FWP Program Manager Washington, D.C.
Alex Barbarika	USDA/FSA Agricultural Economist Washington, D.C.
Skip Hyberg	USDA/FSA Agricultural Economist Washington, D.C.

This Page Intentionally Blank

9.0 REFERENCES

Bailey *et al.* 1995 — Bailey, R.G., P.E. Avers, T. King, and W.H. McNab (eds.). 1995. Ecoregions and Subregions of the United States Map. U.S. Department of Agriculture, U.S. Forest Service.

Brady and Weil 1996 — Brady, N. and R. Weil. 1996. The Nature and Properties of Soils, 11th Ed. Prentice-Hall, Inc., Upper Saddle River, NJ. Pp. 563-599.

Brown and Reeder 2007 — Brown, Dennis M. and Richard J. Reeder. 2007 "Farm-Based Recreation – A Statistical Profile." ERR-53. U.S. Department of Agriculture, Economic Research Service.

Crumpton *et al*. 2006 — Crumpton, W.G., G.A. Stenback, B.A. Miller, and M.J. Helmers. 2006. Potential Benefits of Wetland Filters for Tile Drainage Systems: Impact on Nitrate Loads to Mississippi River Subbasins. U.S. Department of Agriculture Project Number: IOW06682. Iowa State University, Ames, IA. Pp. 4-10.

D'Abramo and Brunson 1996 — D'Abramo, Louis R. and Martin W. Brunson. 1996. Production of Freshwater Prawns in Ponds. Southern Regional Agricultural Center Publication No. 484. July.

Delaney and Craig 1997 — Delaney, Robert L. and Mary R. Craig. 1997. Longitudinal Changes in Mississippi River Floodplain Structure. U.S. Geological Survey Upper Mississippi River Long-term Resource Monitoring Program. Project Status Report 97-02. April 1997.

Durst 2007 — Durst, Ron L. 2007. "Effects of Reducing the Income Cap on Eligibility for Farm Program Payments." EIB-27. U.S. Department of Agriculture, Economic Information Bulletin.

EPA 1995 — Environmental Protection Agency. 1995. America's Wetlands: Our Vital Link between Land and Water. Office of Water, Office of Wetlands, Oceans and Watersheds. EPA843-K-95-001. Pp. 3-9

EPA 2008a — Environmental Protection Agency. 2008. Sole Source Aquifer Protection Program. http://cfpub.epa.gov/ safewater/sourcewater/ sourcewater.cfm?action=SSA. Accessed July 2008.

EPA 2008b — Environmental Protection Agency. 2008. Final Rule - Fact Sheet Effluent Guidelines for the Aquatic Animal Production Industry. http://www.epa.gov/guide/aquaculture/fs-final. Accessed July 2008.

Gleason *et al*. 2008 — Gleason, R.A., M.K. Laubhan, and N.H. Euliss Jr. (eds.). 2008. Ecosystem Services Derived from Wetland Conservation Practices in the United States Prairie Pothole Region with an Emphasis on the U.S. Department of Agriculture Conservation Reserve and Wetlands Reserve Programs. U.S. Geological Professional Paper 1745, Pp58.

Hanson 2006 — Hanson, L. 2006. Wetland Status and Trends. Agricultural Resources and Environmental Indicators. U.S. Department of Agriculture Economic Research Service EIB-16, Chapter 2.3.

McGuire 2007 — McGuire, V.L. 2007. Water-level Changes in the High Plains Aquifer, Predevelopment to 2005 and 2003 to 2005. U.S. Geological Survey Scientific Investigations Report 2006-5324.

Mitsch and Gosselink 1993 — Mitsch, W.J. and J.G. Gosselink. 1993. Wetlands, 2nd ed. Van Nostrand Reinhold, New York, NY. 582 pp.

Monke 2008 — Monke, Jim. 2008. "Payment Limits for Farm Commodity Programs: Issues and Proposals." Congressional Research Service Report for Congress, the Library of Congress.

Sugg 2007 — Sugg, Z. 2007. Assessing U.S. Farm Drainage: Can GIS Lead to Better Estimates of Subsurface Drainage Extent? World Resources Institute. www.wri.org. Accessed August 2008.

UMES 2002 — University of Minnesota Extension Service. 2002. Agricultural Drainage Publication Series: Issues and Answers, Pub. #07740. St. Paul, MN.

USDA 1997 — U.S. Department of Agriculture. 1997. Press release: Glickman Announces New CRP Priority Area. http://www.usda.gov/news/releases/1997/01/0018.htm. Accessed September 2008.

USDA ARMS 2007 — U.S. Department of Agriculture, Agricultural Resource Management Survey. 2007. 2006 Agricultural Resource Management Survey. Economic Research Service On-line Tailored Reports. http://www.ers.usda.gov/Data/ARMS /FarmsOverview.htm. Accessed February 29, 2008.

USDA ERS 2007 — U.S. Department of Agriculture, Economic Research Service. 2007. Farm Income and Costs: Farms Receiving Government Payments. http://www.ers.usda.gov/Briefing/ FarmIncome/govtpaybyfarmtype.htm. Accessed February 29, 2008.

USDA ERS 2008 — U.S. Department of Agriculture, Economic Research Service. 2008. Aquaculture Briefing Room. http://www.ers.usda.gov/ briefing/aquaculture/. Accessed July 2008.

USDA FSA 2003 — U.S. Department of Agriculture, Farm Service Agency. 2003. Final Programmatic Environmental Impact Statement for the Conservation Reserve Program. January.

USDA FSA 2006 — US. Department of Agriculture, Farm Service Agency. 2006. 2-CRP. Revision 4, Amendment 7.

USDA FSA 2008a — US. Department of Agriculture, Farm Service Agency. 2008. FSA Handbook for Environmental Quality Programs, 1-EQ.

USDA FSA 2008b — US. Department of Agriculture, Farm Service Agency. 2008. CRP Contract Summary and Statistics. http://www.fsa.usda.gov/Internet/ FSA_File/may2008.pdf. Accessed May 2008.

USDA NASS 2006 — U.S. Department of Agriculture, National Agricultural Statistics Service. 2006. Census of Aquaculture 2005. Volume 3, Special Studies, Part 2. AC-02-SP-2.

USDA NASS 2008 — U.S. Department of Agriculture, National Agricultural Statistics Service. 2008. Farms, Land in Farms, and Livestock Operations – 2007 Summary.

USDA NRCS 2003 — U.S. Department of Agriculture, Natural Resources Conservation Service. 2003. Conservation Practice Standard Code 397, Aquaculture Ponds. March 2003.

USDA NRCS 2008a	U.S. Department of Agriculture, Natural Resources Conservation Service. 2008. National Engineering Handbook, Part 637, Chapter 3. Constructed Wetlands. May 2008.
USDA NRCS 2008b	U.S. Department of Agriculture, Natural Resources Conservation Service. 2008. National Resources Inventory – 2003 Annual. http://www.nrcs.usda.gov/technical/NRI. Accessed July 2008.
USFWS 2006	United States Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau. 2006. "National Survey of Fishing, Hunting, and Wildlife-Associated Recreation."
USFWS 2008a	U.S. Fish and Wildlife Service. 2008. Environmental Conservation Online Services. http://ecos.fws.gov/tess_public/TESSBoxscore. Accessed July 2008.
USFWS 2008b	U.S. Fish and Wildlife Service. 2008. Listed Species with Critical Habitat. http://ecos.fws.gov/tess_public/CriticalHabitat.do?nmfs=1. Accessed July 2008.
USGS 2005a	U.S. Geological Survey. 2005. Surface Water Use in the United States. http://ga.water.usgs.gov /edu/wusw.html. Accessed 24 March 2008.
USGS 2005b	U.S. Geological Survey. 2005. Ground water use in the United States. http://ga.water.usgs.gov /edu/wugw.html Accessed 25 March 2008.
Zucker and Brown 1998	Zucker, L.A. and L.C. Brown (eds.). 1998. Agricultural Drainage: Water Quality Impacts and Subsurface Drainage Studies in the Midwest. Ohio State Univ. Extension Bulletin 871.

This Page Intentionally Blank

APPENDIX A
State Acreage Allocations under the Farmable Wetlands Program

This Page Intentionally Blank

APPENDIX A
State Acreage Allocations under the Farmable Wetlands Program

State	Allocation (in acres)	State	Allocation (in acres)
Alabama	11,000	Nebraska	75,000
Alaska	1,000	Nevada	5,000
Arizona	1,000	New Hampshire	1,000
Arkansas	33,000	New Jersey	1,000
California	9,000	New Mexico	1,000
Colorado	8,000	New York	24,000
Connecticut	1,000	North Carolina	7,000
Delaware	1,000	North Dakota	100,000
Florida	1,000	Ohio	25,000
Georgia	5,000	Oklahoma	2,000
Hawaii	1,000	Oregon	13,000
Idaho	7,000	Pennsylvania	6,000
Illinois	89,000	Puerto Rico	1,000
Indiana	35,000	Rhode Island	1,000
Iowa	100,000	South Carolina	1,000
Kansas	35,000	South Dakota	100,000
Kentucky	2,000	Tennessee	4,000
Louisiana	15,000	Texas	10,000
Maine	3,000	Utah	2,000
Maryland	2,000	Vermont	5,000
Massachusetts	1,000	Virginia	3,000
Michigan	16,000	Washington	5,000
Minnesota	100,000	West Virginia	2,000
Mississippi	23,000	Wisconsin	39,000
Missouri	31,000	Wyoming	11,000
Montana	25,000		

Source: USDA FSA 2006.

This Page Intentionally Blank

APPENDIX B
Conservation Practices

This Page Intentionally Blank

APPENDIX B
Conservation Practices

Practice	Title
CP1	Establishment of Permanent Introduced Grasses and Legumes
CP2	Establishment of Permanent Native Grasses
CP3	Tree Planting
CP3A	Hardwood Tree Planting
CP4B	Permanent Wildlife Habitat (Corridors), Noneasement
CP4D	Permanent Wildlife Habitat Noneasement
CP5A	Field Windbreak Establishment, Noneasement
CP8A	Grass Waterways, Noneasement
CP9	Shallow Water Areas for Wildlife
CP10	Vegetative Cover - Grass - Already Established
CP11	Vegetative Cover -Trees - Already Established
CP12	Wildlife Food Plot
CP15A	Establishment of Permanent Vegetative Cover (Contour Grass Strips), Noneasement
CP15B	Establishment of Permanent Vegetative Cover (Contour Grass Strips), on Terraces
CP16A	Shelterbelt Establishment, Noneasement
CP17A	Living Snow Fences, Noneasement
CP18B	Establishment of Permanent Vegetation to Reduce Salinity, Noneasement
CP18C	Establishment of Permanent Salt Tolerant Vegetative Cover, Noneasement
CP21***	Filter Strips
CP22***	Riparian Buffer
CP23	Wetland Restoration
CP23A	Wetland Restoration, Non-Floodplain
CP24	Cross Wind Trap Strips
CP25	Rare and Declining Habitat
CP27	Farmable Wetlands
CP28	Farmable Wetland Buffer
CP29	Marginal Pastureland Wildlife Habitat Buffer
CP30	Marginal Pastureland Wetland Buffer
CP31	Bottomland Timber Establishment on Wetlands
CP32	Expired CRP Hardwood Tree Planting on Marginal Pastureland
CP33	Habitat Buffers for Upland Birds
*--CP35A	Emergency Forestry - Longleaf Pine - New
CP35B	Emergency Forestry - Longleaf Pine - Existing
CP35C	Emergency Forestry - Bottomland Hardwood - New
CP35D	Emergency Forestry - Bottomland Hardwood - Existing

APPENDIX B
Conservation Practices (cont'd.)

Practice	Title
CP35E	Emergency Forestry - Softwood - New
CP35F	Emergency Forestry - Softwood - Existing
CP35G	Emergency Forestry - Upland Hardwood - New
CP35H	Emergency Forestry - Upland Hardwood - Existing
CP35I	Emergency Forestry - Mixed Trees - Existing
CP36	Longleaf Pine – Establishment
CP37	Duck Nesting Habitat
CP38	State Acres for Wildlife Enhancement--*

APPENDIX C
Acres Subject to Tree Thinning by Conservation Practice and State

This Page Intentionally Blank

APPENDIX C: Acres Subject to Tree Thinning by Conservation Practice and State

State	Tree Planting (CP3)	Hardwood Tree Planting (CP3A)	Permanent Wildlife Habitat (Corridors), Noneasement (CP4B)	Field Windbreak, Establishment, Noneasement (CP5A)	Shelterbelt Establishment, Noneasement (CP16A)	Riparian Buffer (CP22)	Bottomland Timber Establishment on Wetlands (CP31)	Expired CRP Hardwood tree Planting on Marginal Pastureland (CP32)	Emergency Forestry-Longleaf Pine-New (CP35A)*
ALABAMA	80,074	16,190	529	0	0	33,779	757	0	9,567
ALASKA	0	0	0	0	0	198	0	0	0
ARKANSAS	8,165	35,584	1,060	0	0	56,533	6,696	393	0
CALIFORNIA	5	57	0	0	0	7,753	0	0	0
COLORADO	81	17	162	1,438	4,639	892	0	0	0
CONNECTICUT	0	0	0	0	0	63	0	0	0
DELAWARE	0	3,385	0	0	0	119	0	0	0
FLORIDA	7,171	953	0	0	0	64	0	0	856
GEORGIA	25,363	6,304	77	0	0	1,556	25	0	0
IDAHO	4,667	50	127	566	213	7,201	0	0	0
ILLINOIS	1,059	51,151	727	2,701	159	110,138	1,521	634	0
INDIANA	662	17,661	428	2,300	26	5,747	2,517	575	0
IOWA	348	14,593	725	6,570	2,219	64,607	1,050	1,559	0
KANSAS	89	508	620	1,942	797	4,249	132	0	0
KENTUCKY	258	5,787	104	8	0	24,165	261	234	0
LOUISIANA	19,026	118,476	7	0	0	5,423	17,130	922	265
MAINE	176	1	0	0	0	201	0	0	0
MARYLAND	533	655	8	0	0	16,567	0	0	0
MASSACHUSETTS	0	0	0	0	0	5	0	0	0
MICHIGAN	3,999	3,586	418	2,612	82	3,491	11	6	0
MINNESOTA	8,116	26,073	432	9,570	4,111	47,528	228	1,851	0
MISSISSIPPI	138,479	88,689	84	0	0	161,706	7,284	778	13,562
MISSOURI	388	16,234	123	111	63	28,849	775	546	0
MONTANA	140	74	172	290	275	2,403	0	0	0
NEBRASKA	687	903	27	30,767	2,452	3,255	0	0	0
NEW HAMPSHIRE	0	0	0	0	0	15	0	0	0
NEW JERSEY	66	49	0	13	0	215	0	0	0
NEW MEXICO	0	0	0	0	0	5,375	0	0	0
NEW YORK	471	859	37	17	0	13,137	2	0	0
NORTH CAROLINA	7,865	2,403	120	22	13	31,518	7	0	0
NORTH DAKOTA	76	324	5	5,143	5,016	600	0	0	0
OHIO	1,296	7,217	202	3,118	112	6,723	57	39	0
OKLAHOMA	43	582	73	51	37	1,693	441	77	0
OREGON	1,921	70	1,353	4	2	33,553	0	0	0
PENNSYLVANIA	198	1,273	48	4	0	22,820	2	0	0
PUERTO RICO	0	54	0	0	0	800	0	0	0
SOUTH CAROLINA	25,804	1,726	0	66	0	27,659	0	0	0
SOUTH DAKOTA	428	104	76	22,783	15,358	4,944	0	0	0
TENNESSEE	13,765	4,501	680	0	0	6,310	2,700	1	0
TEXAS	2,529	356	1,286	43	33	33,306	381	0	321
UTAH	0	0	0	4	0	205	0	0	0
VERMONT	0	0	0	0	0	1,951	0	0	0
VIRGINIA	6,553	276	217	3	0	22,728	0	0	0
WASHINGTON	1,186	15	432	13	9	22,284	0	0	0
WEST VIRGINIA	119	9	0	0	0	3,706	0	0	0
WISCONSIN	5,384	46,800	251	232	26	16,820	0	948	0
WYOMING	12	0	0	251	63	5,629	0	0	0
U.S. TOTAL	**367,203**	**473,552**	**10,609**	**90,643**	**35,713**	**848,533**	**41,976**	**8,563**	**24,571**

Arizona, Hawaii, Nevada, and Rhode Island are excluded due to confidentiality concerns. Data from these States are included in the totals.

Source: U.S. Department of Agriculture. 2008. CRP Contract Summary and Statistics. May 2008 Monthly Summary. http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=crp-st. Accessed July 16, 2008.

* Emergency Forestry CRP Preliminary Results, 2006 Sign-up

APPENDIX C: Acres Subject to Tree Thinning by Conservation Practice and State (cont'd.)

State	Emergency Forestry-Longleaf Pine-Existing (CP35B)*	Emergency Forestry-Bottomland Hardwood-New (CP35C)*	Emergency Forestry-Bottomland Hardwood-Existing (CP35D)*	Emergency Forestry-Softwood-New (CP35E)*	Emergency Forestry-Softwood-Existing (CP35F)*	Emergency Forestry-Upland Hardwood-New (CP35G)*	Emergency Forestry-Upland Hardwood-Existing (CP35H)*	Emergency Forestry-Mixed Trees-Existing (CP35I)*	Total Acreage by State
ALABAMA	2,173	136	1,902	1,157	1,610	11	28	216	148,129
ALASKA	0	0	0	0	0	0	0	0	198
ARKANSAS	0	0	0	0	0	0	0	0	108,431
CALIFORNIA	0	0	0	0	0	0	0	0	7,815
COLORADO	0	0	0	0	0	0	0	0	7,229
CONNECTICUT	0	0	0	0	0	0	0	0	63
DELAWARE	0	0	0	0	0	0	0	0	3,504
FLORIDA	940	0	25	653	212	0	63	0	10,937
GEORGIA	0	0	0	0	0	0	0	0	33,325
IDAHO	0	0	0	0	0	0	0	0	12,824
ILLINOIS	0	0	0	0	0	0	0	0	168,090
INDIANA	0	0	0	0	0	0	0	0	29,916
IOWA	0	0	0	0	0	0	0	0	91,671
KANSAS	0	0	0	0	0	0	0	0	8,337
KENTUCKY	0	0	0	0	0	0	0	0	30,817
LOUISIANA	20	276	651	3,240	551	0	250	1,204	167,441
MAINE	0	0	0	0	0	0	0	0	378
MARYLAND	0	0	0	0	0	0	0	0	17,763
MASSACHUSETTS	0	0	0	0	0	0	0	0	5
MICHIGAN	0	0	0	0	0	0	0	0	14,205
MINNESOTA	0	0	0	0	0	0	0	0	97,909
MISSISSIPPI	2,095	11,355	11,790	65,906	18,682	1,482	452	18,371	540,715
MISSOURI	0	0	0	0	0	0	0	0	47,089
MONTANA	0	0	0	0	0	0	0	0	3,354
NEBRASKA	0	0	0	0	0	0	0	0	38,091
NEW HAMPSHIRE	0	0	0	0	0	0	0	0	15
NEW JERSEY	0	0	0	0	0	0	0	0	343
NEW MEXICO	0	0	0	0	0	0	0	0	5,375
NEW YORK	0	0	0	0	0	0	0	0	14,523
NORTH CAROLINA	0	0	0	0	0	0	0	0	41,948
NORTH DAKOTA	0	0	0	0	0	0	0	0	11,164
OHIO	0	0	0	0	0	0	0	0	18,764
OKLAHOMA	0	0	0	0	0	0	0	0	2,997
OREGON	0	0	0	0	0	0	0	0	36,903
PENNSYLVANIA	0	0	0	0	0	0	0	0	24,345
PUERTO RICO	0	0	0	0	0	0	0	0	854
SOUTH CAROLINA	0	0	0	0	0	0	0	0	55,255
SOUTH DAKOTA	0	0	0	0	0	0	0	0	43,693
TENNESSEE	0	0	0	0	0	0	0	0	27,957
TEXAS	43	186	2,181	3,371	928	102	66	3,277	48,409
UTAH	0	0	0	0	0	0	0	0	209
VERMONT	0	0	0	0	0	0	0	0	1,951
VIRGINIA	0	0	0	0	0	0	0	0	29,777
WASHINGTON	0	0	0	0	0	0	0	0	23,939
WEST VIRGINIA	0	0	0	0	0	0	0	0	3,834
WISCONSIN	0	0	0	0	0	0	0	0	70,461
WYOMING	0	0	0	0	0	0	0	0	5,955
U.S. TOTAL	5,271	**11,953**	**16,549**	74,327	21,983	**1,595**	**859**	**23,068**	2,056,907

Arizona, Hawaii, Nevada, and Rhode Island are excluded due to confidentiality concerns. Data from these States are included in the totals.
Source: U.S. Department of Agriculture. 2008. CRP Contract Summary and Statistics. May 2008 Monthly Summary. http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=crp-st. Accessed July 16, 2008.

* Emergency Forestry CRP Preliminary Results, 2006 Sign-up

APPENDIX D
Ecoregion Divisions

This Page Intentionally Blank

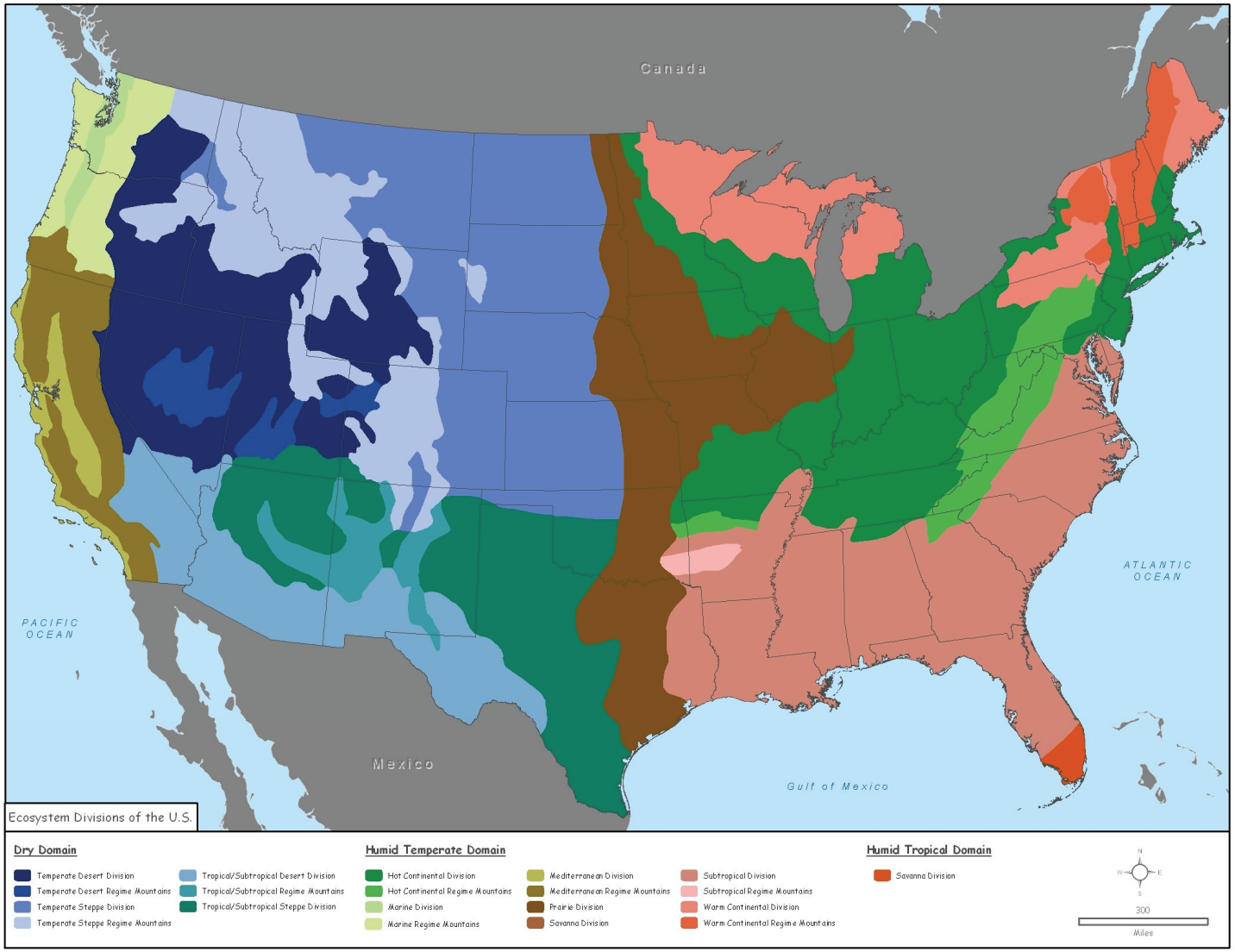


Figure D-1. Ecoregion Divisions of the United States (Bailey et al. 1995).

Ecoregion Divisions of the United States				
	Division	**General Description**	**Vegetation Species**	**Animal Species**
Humid Temperate Domain	*Warm Continental Division*	Part of the humid temperate domain, this division is located from the continental interior to the east coast. The New England lowlands have low relief, but rolling and morainic hills, drumlins, eskers and outwash plains are typical of the area. Elevations range from sea level to 2,400 ft.	This area is transitional between boreal and broadleaf deciduous forests. Part of it contains mixed stands of a few coniferous species (white pine, eastern hemlock, and eastern red cedar) and a few deciduous species (mainly yellow birch, sugar maple, and American beech).	Short-tailed weasel (ermine), snowshoe hare, black bear, striped skunk, marmot, chipmunk, jumping mice, beaver, muskrat, badgers, and striped ground squirrels and ptarmigan. Many bird species migrate south during winter. Summer residents include the white-throated sparrow, northern junco, and yellow-bellied sapsuckers.
	>Warm Continental Regime Mountain	The Adirondack Mountains make up the New England Highlands along with broad valleys and numerous swamps and lakes. Elevations range from 500 to 4,000 ft .and a few isolated peaks are higher than 5,000 ft.	Valley regions contain hardwood forest (sugar maple, yellow birch, beech, and hemlock). Low mountain slopes support mixed forest of spruce, fir, maple, beech, and birch. Above the mixed forest, pure stands of balsam fir and red spruce occur. Alpine meadow occurs above the timberline.	This community contains many of the species that occur in the warm continental division. The alpine tundra region has unique fauna such as longtail shrews, boreal (southern) red-backed vole, gray-cheeked thrush, spruce grouse, and gray jay.
	Hot Continental Division	This landscape is south of the warm continental climate in the Humid Temperate Domain. This division includes the Appalachian Plateau, New England Lowlands, Mid-Atlantic Coastal Plain, Piedmont Plateau, East-Central Drift, Ozark Highlands, and the Eastern Interior Uplands and Basins. Low rolling hills, dissected plateaus, and basins are found in Tennessee and Kentucky. Sedimentary formations in the Appalachian Plateau are nearly horizontal, but are so elevated and dissected that the landforms are mostly hilly and mountainous. Elevations range from sea level (Coastal Plain) to 3,000 ft (Appalachian Plateau).	Vegetation in this division is winter deciduous forest, dominated by tall broadleaf trees. The eastern broadleaf province is described as oak-hickory. The Appalachian mountain valleys support mixed oak-pine forest, Above the valley lies the Appalachian oak forest dominated by white and black oak, Above this forest, the northeastern hardwood forest is composed of birch, beech, maple, elm, red oak, basswood, hemlock and white pine. Spruce-fir forest and meadows are found on the high peaks of the Alleghany and Great Smoky Mountains. Lower layers of small trees and shrubs are weakly developed. In spring, a luxuriant ground cover of herbs quickly develops, but is greatly reduced after trees reach full foliage and shade the ground.	Whitetail deer, black bear, bobcat, gray fox, raccoon, gray squirrel, fox squirrel, eastern chipmunk, white-footed mouse, pine voles, shorttail shrew, and cotton mouse. Bird populations are large. Turkey, ruffed grouse, bobwhite, and mourning doves are game birds. The most abundant breeding birds include cardinals, tufted titmouse, wood thrush, summer tanager, red-eyed vireo, blue-gray gnatcatcher, and Carolina wren.

Ecoregion Divisions of the United States				
	Division	**General Description**	**Vegetation Species**	**Animal Species**
	>Hot Continental Regime Mountains	Low mountains and open valleys make up the central Appalachian Highlands. Elevations range from 300-6,000 ft and are higher to the south. The Ozark Highland is an area of low dissected mountains with altitudes up to 2,000 ft. Valleys are narrow, with steep sides and gradients.	The valleys of the southern Appalachian Mountains support a mixed oak-pine forest that resembles its counterpart on the coastal plain. Appalachian oak forest lies above the valley and is dominated by a dozen species each in the black and white oak group. Above the oak forest is a northeastern hardwood forest, composed of birch, beech, maple, elm, red oak, and basswood. The Ozark Highlands support and oak-hickory forest with overstory species of red oak, white oak, and hickory. Shortleaf pine and eastern red cedar inhabit disturbed sites, shallow soils, and south and west facing slopes.	The southern limit of distribution of many northern forest mammals coincides with the boundaries of this regime. Many species are limited to scattered areas at higher elevations due to spruce-fir die-off. Black bear and white-tail deer are common. Abundant populations of several species of birds occupy the upper elevations of the boreal and hardwood forests. Areas with understory components of azaleas and rhododendrons host worm-eating warblers.
	Subtropical Division	Part of the Humid Temperate Domain, this division occupies the Southeastern US, Atlantic and Gulf Coast plains, and the lower Mississippi floodplains. Flat or gentle sloping plains encompass 50-80% of the Piedmont and Gulf Coastal Plains. In the Outer Coastal Plain over 50% of the area is gently sloping. The region contains numerous streams, marshes, swamps, and lakes.	Climax vegetation of the southeast is medium-tall broadleaf deciduous and needleleaf evergreen trees. At least 50% of the stands are made up of loblolly pine, shortleaf pine, and other pine species. Common associates include oak, hickory, sweetgum, blackgum, red maple, and winged elm. The temperate rainforest of the outer coastal plain has climax vegetation of evergreen-oak and magnolia forest. Bald Cypress and gum dominate inland swamps and lakes. Pecan, eastern sycamore, American elm and roughleaf dogwood inhabit the Mississippi River floodplains. Much of the sandy coastal region of the US is covered by second-growth forests of longleaf, loblolly, and slash pines. The West Gulf Coast is bordered by salt marshes characterized by the marsh grass *Spartina.* Lianas and epiphytes are common.	Fauna vary with the age and stocking of timber stands, percent of deciduous trees, proximity to openings, and presence of bottom-land forest types. Whitetail deer, cottontail rabbits, raccoon and fox are widespread. The eastern wild turkey, bobwhite, and mourning dove, warblers, white-eyed vireo, wood duck, yellow-billed cuckoo, and Louisiana waterthrush occur throughout. Nine-banded armadillos are frequently encountered in this region.

Ecoregion Divisions of the United States				
	Division	**General Description**	**Vegetation Species**	**Animal Species**
	>Subtropical Regime Mountains	This division is comprised of the Ouachita Mixed Forest - Meadow Province/Ouachita Highlands. Sedimentary rocks were compresses to form folds with ridges with maximum elevation of 2,700 ft. The folds and the mountains trend east-west.	This area supports oak-hickory-pine forests. Primary overstory species are southern red oak, black oak, white oak, and hickories. Shortleaf and loblolly pine provide 40% of the cover. Hardwoods populate the rich bottom lands of the valleys while pines populate the poorer lands.	Bird and mammal species are similar to those found in the surrounding southeastern mixed forest. One amphibian, the Ouachita dusky salamander, is found exclusively in the province's rocky, gravelly streams.
	Marine Division	Situated on the Pacific coast between latitudes 40 and 60 N. The pacific lowland mixed forest occupies a north-south depression between the Coast Ranges and the Cascade Mountains. Elevations range from sea level to 1,500 ft. The province includes isolated hills and low mountains.	Principles trees are western red cedar, western hemlock, and Douglas fir. In interior valleys, the coniferous forest is less dense along the coast where maple, ash, and black cottonwood are located. Prairies support open stands of oak broken up by Douglas fir. Indicator species are Oregon white oak and Pacific madrone.	Mule deer are the most common mammal. Chief predators are the mountain lion and bobcat. Gray squirrels, wood rats, rabbits and fox. Ruffed grouse are found in thickets. Periodically abundant acorn crops attract flocks of band-tailed pigeons, acorn woodpeckers, and mountain quail.
	>Marine Regime Mountains	The Cascade Range rises 5,000 ft above sea level along the coast and from 8,000-9,000 ft in the interior. The mountain range is dominated by a volcano that reaches higher elevations. The area is bordered by a narrow coastal plane.	Conifer forests of Douglas fir, western red cedar, western hemlock, grand and silver fir, Sitka Spruce, and Alaska cedar. Shrubs grow exceptionally well and are impenetrable in some places. Conifers dominate the region except in riparian zones where broadleaf species such as black cottonwood and red alder. Timberline varies from 7,700 - 10,000 ft and above this is an alpine zone covered with shrubs and herbs.	Common large mammals include elk, deer, mountain lion, bobcat, and black bear. Typical small mammals include mice, Douglas squirrels, Townsend chipmunks, red tree voles, and wood rats. A variety of birds and the Pacific tree frog and Pacific giant salamander live in the region's moist and cool forests.

Ecoregion Divisions of the United States				
	Division	**General Description**	**Vegetation Species**	**Animal Species**
	Prairie Division	Part of the humid temperate domain, prairies are typically associated with continental, mid-latitude climates that are designated as subhumid. This division occupies a broad belt extending from Texas northward to southern Alberta and Saskatchewan. Temperature characteristics correspond to those of adjacent humid climates, forming the basis for two types of prairies: temperate and subtropical.	Forest and prairie mix in a transitional belt on the eastern border of the division. Grasses dominate prairie vegetation with the most prevalent being bluestem. Vegetation in temperate prairie is forest-steppe, characterized by intermingled prairie, groves, and strips of deciduous trees. Trees are commonly found near streams and on northfacing slopes. Cottonwoods are found in floodplains. The subtropical prairie parkland is dominated by medium to tall grasses and a few hardy tree species. Post oak and blackjack oak dominate the cross timbers regions of Oklahoma and Texas.	Mink and river otter are indicative of riverine forests. Thirteen-lined ground squirrels and blacktail prairie dogs are commonly seen on the prairie. Birds of riverine forest include the belted kingfisher, bank swallow, spotted sandpiper, and green-backed heron. Upland birds include the horned lark, eastern meadowlark, and mourning dove. White-tailed deer and nine-banded armadillo are abundant.
	Mediterranean Division	Located on the Pacific coast between latitudes 30 and 45 N. the Mediterranean division is the transition zone between the dry west coast desert and the wet west coast. The land area includes the discontinuous coastal plain, low mountains, and interior valleys adjacent to the Pacific Ocean from San Francisco to San Diego.	The coastal plain and valleys of southern California have sagebrush and grassland communities. The central valley of California is composed of introduced annual grasses after overgrazing, farming, and fire destroyed native species. The redwood is characteristic on seaboard slopes in northern California.	Intensive agricultural development has changed the fauna of the grasslands. Larger species have been eliminated or pushed into the hills. Small rodents and rabbits remain and mule deer live in bushy areas. Streams and rivers are used by anadromous fish. The spotted owl can be found in old-growth and second-growth redwood forest. A variety of shore birds and waterfowl occur in the coastal part of the province.
	>Mediterranean Regime Mountains	This area in California and Oregon covers the southernmost portions of the Cascade Mountains, the northern Coast range, the Klamath Mountains, and the Sierra Nevada. The western slope of the Sierra Nevada's rises gradually from 2,000 - 14,000 ft. The eastern slope drops abruptly to the Great Basin floor. The mountains of southern California are steep; elevations range from 2,000 - 8,000 ft.	Most low hills are covered by chaparral or close growing evergreen shrubs. On higher slopes digger pine and blue oak dominate. The montane zone lies between 2-6 thousand ft in the Cascades, 4-7 thousand ft in the central Sierras, and 5-8 thousand ft in the south. The most important species are ponderosa, Jeffrey, Douglas fir, sugar pine, white fir, red fir, and incense cedar. Vegetation in the California coastal range is dominated by chaparral and sclerophyll forest.	The common large mammals in this division are mule deer, mountain lion, coyote and black bear. Common rodents mentioned previously occur here. Small mammals peculiar to chaparral are Merriam chipmunk, California Mouse, and kangaroo rats. Common birds are mountain quail, Cassin's finch, Hammond's flycatcher, Lincoln's sparrow, Audubon's warbler, pine siskin, Oregon junco, blue goose, sapsuckers and wild chickadees. Screech owls, pygmy owls, gray owls and Cooper's hawk are common birds-of-prey.

Ecoregion Divisions of the United States				
	Division	**General Description**	**Vegetation Species**	**Animal Species**
Dry Domain	*Tropical/Subtropical Steppe Division*	Part of the Dry Domain, this division contains shrub-steppe, plateaus, and plains located from the horn of Texas, through Oklahoma and inland to the four corners region. Generally, steppes are transition zones between deserts and semiarid landscapes.	Vegetation composition is conspicuous with arid grasslands and xeric shrubs at lower elevations and pygmy forests at higher elevations. Vegetation at lower elevations grows in clumps or open stands, but seldom covers the ground completely leaving many bare areas. Several pinion and juniper species are found at middle elevations surrounded by vegetation found at lower elevations (sagebrush, yucca, saltbush, rabbitbrush and more). Ponderosa pine and Douglas fir carpet moist canyons and cottonwood dominates riparian areas.	White-tail and mule deer, pronghorn, coyote, and bobcat occupy all available habitats/landscape. The fox squirrel is hunted in wooded areas along streams. Several rodent species exploit available habitats along with hares, rabbits, gray fox, ringtail, and skunks. Many bird species inhabit the area year round while several migrate here in summer or winter. Rattlesnakes and lizards also live here.
	>Tropical/Subtropical Steppe Regime Mountains	The majority of this landscape contains steep foothills and mountains, but some deeply dissected high plateaus occur here. Elevations range from 4,500 - 10,000 ft, with some mountain peaks reaching 12,600 ft. In many areas, relief is higher than 3,000 ft. Isolated volcanic peaks rise to considerable heights in the northwest.	Lower elevations are characterized by mixed grasses, chaparral bush, oak-juniper and pinion-juniper woodlands. At about 7,000 ft open forests of ponderosa pine appear with pinion and juniper occupying southern slopes. Douglas fir replaces pinion and juniper at about 8,000 ft. Aspen and limber pine are also common in this area.	The most common large mammal is the mule deer. Predators include mountain lions, coyotes, and bobcats. Deer mice, longtail weasels, porcupine, golden-mantled ground squirrel, Colorado chipmunk, red and Abert squirrels, wood rats, pocket gophers, longtail voles, and cottontail rabbits. Common bird species are the northern pygmy owl, olive warbler, red-faced warbler, hepatic tanager, mountain bluebird, pygmy nuthatch, white-breasted nuthatch, Mexican junco, Steller's Jay, red-shafted flicker and Rocky Mountain sapsuckers. Goshawks and red-tail hawks are present. Short-horned lizards are the only lizards found here.

Ecoregion Divisions of the United States				
	Division	**General Description**	**Vegetation Species**	**Animal Species**
	Tropical/Subtropical Desert Division	Parts of the Dry Domain, located south of the Arizona-New Mexico Mountains are the continental deserts. Deserts including the Chihuahuan, Mojave, Colorado, and Sonoran are characterized by plains from which isolated mountains and buttes rise abruptly. The Rio Grande, Pecos, and Colorado Rivers, and their larger tributaries, are the only perennial water sources available.	The region is characterized by dry-desert vegetation, a class of xerophytic plants that are widely dispersed and provide negligible ground cover. In dry periods, visible vegetation is limited to small hard-leaved or spiny shrubs, cacti, or hard grasses. Many species of small annuals may be present, but they appear only after the rare but heavy rains have saturated the soil. In the Mojave-Sonoran Deserts (American Desert), plants are often so large that some places have a near-woodland appearance. Well known are the treelike saguaro cactus, the prickly pear cactus, the ocotillo, creosote bush, and smoke tree. However, much of the desert of the Southwestern United States is in fact scrub, thorn scrub, savanna, or steppe grassland. Parts of this region have no visible plants; they are made up of shifting sand dunes or almost sterile salt flats. Some isolated mountains are high enough to carry a belt of pinion, juniper, Douglas fir, and white fir.	Pronghorn antelope and mule deer are the most widely distributed game animals. Whitetail deer inhabit parts of Texas. The collared peccary or javelina resides in southern parts of the area. Predators include coyote, bobcat, and several hawk, eagle, and owl species. Blacktail rabbits, desert cottontails, kangaroo rats, wood rats and other small rodents compete with domestic herbivores for browse. Common birds include: black-throated sparrows, roadrunners, thrashers and raven. Several quail species occupy the area. Reptiles include numerous species of snakes and lizards.
	Temperate Steppe Division	Located in the Dry Domain, this division contains the Rocky Mountain Piedmont, Upper Missouri Basin Broken Lands, Palouse grassland of Washington and Idaho, and the High Plains and Central Lowlands between the Prairie Parkland and the 104th meridian, from the Canadian Border through Oklahoma.	The vegetation transitions from mixed tall and short grass prairie in the east to mainly short grass in the west. The Great Plains grasslands east of the Rockies have scattered trees and shrubs. Many species of grasses and herbs grow in the Prairies. The Palouse grasslands resemble the Great Plains, but contain no shrubs. Woody vegetation is rare except in cottonwood floodplains.	Pronghorn is the most abundant large mammal, but mule and whitetail deer are common. Lagomorphs, prairie dogs, and other small rodents are preyed upon by coyote and other avian predators. The thirteen-lined ground squirrel and prairie dogs are preyed upon by badgers. Two bird species are unique to short grass prairies east of the Rockies; the mountain plover and McCown's longspur.

Ecoregion Divisions of the United States				
	Division	**General Description**	**Vegetation Species**	**Animal Species**
	>Temperate Steppe Regime Mountains	Located in the dry domain, this regime is in the southern, middle and northern Rocky Mountains. The Rocky Mountains are as high as 14,000 ft. Several sections have intermontane depressions ("parks") with floors as low as 6,000ft. Ranges in central Idaho are formed by granite intrusions called the Idaho Batholith, with altitudes ranging from 3,000 to 7,000 ft. The Black Hills have domal uplifts with an exposed core of Precambrian rock.	The Rocky Mountains are tallest in the southern region. They are characterized by the absence of trees in the tundra and dominated directly below by Englemenn spruce and subalpine fir. At lower elevations lies the montane zone with its characteristic ponderosa pine and Douglas-fir. At lower elevations the foothills have a growth of shrubs, of which, mountain-mahogany and several scrub oak species are conspicuous. In the middle Rocky Mountains below the subalpine zone Douglas firs are the climax dominant, with grand fir associates west of the continental divide. Below this, ponderosa pine is the dominant with lodgepole pines and grasses growing in basins. Sagebrush-steppe dominates the lower slopes of the mountains. In the northern Rocky Mountains, mixed evergreen-deciduous forest predominates, with Douglas fir and cedar-hemlock-Douglas fir being the two types of forest.	Large mammals in this division include black bear, deer, elk, mountain lion, and bobcat. Smaller mammals include squirrels, mice, rats, and lagomorphs. Familiar birds are hawks, jays, chestnut-backed chickadees, red-breasted nuthatches and owls. Harney Peak, in the Black Hills province is inhabited by mountain goats recently introduced into the region.
	Temperate Desert Division	The Temperate deserts are located in the intermountain regions between the Pacific coast and Rocky Mountains. Temperate deserts climates support sparse xerotypical shrubs such as sagebrush. Recently, semi desert shrub vegetation has invaded areas of the western US that were formerly grasslands.	Sagebrush dominates at lower elevations, but other important plants are antelope bitterbrush, shadscale, saltbush, rabbitbrush, blackbrush, and Gambel oak. Greasewood and saltgrass are the only plants that grow in salt-saturated environments. In plots protected from fire, grasses typical of the Palouse grassland or mixed-grass steppe become dominant. Above the sagebrush belt lays a woodland area dominated by Pinion and Juniper. Wet valley bottoms and riparian areas contain willows and sedges, cottonwood, and non-native tamarisk.	Common large mammals that live here are pronghorn, mule deer, mountain lion, bobcat and badgers. Sagebrush provides ideal habitat for pronghorn and white-tailed prairie dogs. Small rodents (squirrels, mice, rats) and jackrabbits are common. Bird species range from common species like Jays and owls to-specialized species such as the sage sparrow and sage thrasher. Reptiles include sagebrush lizard, horned lizard, and prairie rattlesnake.

Ecoregion Divisions of the United States				
	Division	**General Description**	**Vegetation Species**	**Animal Species**
	>Temperate Desert Regime Mountains	This province covers the highest areas of the Great Basin and Colorado Plateau. No perennial lakes occur; streams are rare and usually ephemeral. Ranges rise steeply and are mainly composed of folded and faulted sedimentary rock. Many linear mountain ranges reach altitudes of 13,000 ft.	Sagebrush dominates at lower elevations, but other important plants are antelope bitterbrush, shadscale, saltbush, rabbitbrush, horsebrush, and Gambel oak. All tolerate salt to some extent, but greasewood and saltgrass are the only plants that grow in salt-saturated environments. Pinion and juniper woodlands occupy lower mountain slopes. Ponderosa pine lies on exposed slopes above the pinion and juniper woodlands. Douglas fir typically grows in sheltered locations. Engelmann spruce are in subalpine landscapes.	Sagebrush shrublands provide ideal habitat for pronghorn antelope and whitetail prairie dog. Many species of birds are found in sagebrush ranging from burrowing owls to sage sparrow and sage thrasher. American kestrel, ferruginous hawk, and golden eagle prey on jackrabbits. Collared lizards are also common.
Humid Tropical Domain	*Savanna Division*	Part of the Humid Temperate Domain this divisions covers the landscape in Southern Florida and the Florida Keys. Elevation ranges from sea level - 25 ft. The low coastal plain contains large areas of swamps and marshes, with low beach ridges and dunes. Streams, canals and ditches drain directly into the ocean. Hammocks rise a few feet above the surrounding area in the interior.	Twenty percent of the area is covered by tropical moist hardwood forest. Cypress forests are extensive and mangrove is widespread along the eastern and southern coasts. Within grasslands, hammocks contain groves of medium to tall broadleaf evergreen trees. Mahogany, redbay, and several palmettos are common.	Slight changes in water levels in the Everglades influences habitats and fauna. Mammals include the Florida panther, whitetail deer, black bear, bobcats, and marsh and swamp rabbits. Manatees inhabit estuaries and interlacing channels. Numerous species of birds inhabit the area and the American alligator is a year-round resident.
	>Savanna Regime Mountains	Located in Puerto Rico, the easternmost peaks of a partly submerged mountain range is composed of Cretaceous and older rocks with granite intrusions. East-west ridges and peaks form the backbone of the island. Local relief is considerable with steep slopes. Elevations range from sea level to the highest peak in the Cordillera Central at 4,400 ft.	Most of Puerto Rico is under cultivation, but some rainforest remains. Forest trees include mahogany, ebony, mamey, tree ferns, tree ferns, sierra palm and mango.	Puerto Rico does not have any large wild animals. Along with native bats and lizards, the introduced mongoose and rats compose the majority of the island's vertebrates. The coqui is a distinctive frog. Considerable coral and sport fishes abound in coastal waters.

This Page Intentionally Blank

APPENDIX E
Socioeconomics Analysis Data Tables

This Page Intentionally Blank

Table E-1. CRP Average Statistics by Resource Region

	All	Heartland	Northern Crescent	Northern Great Plains	Prairie Gateway	Eastern Uplands	Southern Seaboard	Fruitful Rim	Basin and Range	Mississippi Portal
Farms receiving Conservation Program payments	358,285	129,866	37,529	47,801	64,315	15,991	22,174	11,880	7,123	21,605
Percent of all farms (percent)	17.2	30.9	13.4	46.9	21.4	4.8	10.2	5.1	7.4	21.0
Average gross cash income ($)	127,509	144,351	124,609	115,285	130,035	52,286	106,979	294,298	150,084	28,425
Average government payments ($)	15,050	16,477	11,076	16,723	14,949	5,056	13,934	26,943	24,471	8,870
Percent of gross cash income (percent)	11.8	11.4	8.9	14.5	11.5	9.7	13.0	9.2	16.3	31.2
Average Conservation Program payments ($)	6,768	6,457	5,128	8,409	6,151	3,296	4,881	17,304	15,284	5,604
Percent of government payments (percent)	45.0	39.2	46.3	50.3	41.1	65.2	35.0	64.2	62.5	63.2

Source: USDA 2007b – Agricultural Resource Management Survey On-line Data Report, 07 December update

This Page Intentionally Blank

Table E-2. 2006 Farm Household Income by Farm Typology and by Region.

Parameter	Region					
	Atlantic	South	Midwest	Plains	West	All Farms
Retirement						
Number of Farm Households	108,299	54,611	118,431	82,628	39,944	403,914
Average Total Household Income ($)	55,708	41,597	63,519	57,615	67,939	57,690
Household Income from Off Farm Sources (%)	98.8	105.4	94.4	98.2	97.8	97.8
Average U.S. Household Income (%)	83.7	62.5	95.4	86.5	102.1	86.7
Farm Households Negative Household Income (%)	7.5	4.8	2.5	3.5	3.5	4.4
Residential/Lifestyle						
Number of Farm Households	194,260	130,877	254,615	210,175	114,903	904,831
Average Total Household Income ($)	81,602	80,158	76,461	97,032	90,082	84,608
Household Income from Off Farm Sources (%)	103.0	104.6	107.8	105.9	110.3	106.2
Average U.S. Household Income (%)	122.6	120.4	114.9	145.8	135.3	127.1
Farm Households Negative Household Income (%)	0	1.5	0.9	1.4	2.1	1.7
Farming Occupation - Lower Sales						
Number of Farm Households	77,416	48,906	118,185	115,757	70,189	430,454
Average Total Household Income ($)	47,361	51,049	56,114	46,714	57,192	51,612
Household Income from Off Farm Sources (%)	108.1	96.8	95.0	102.7	95.3	99.3
Average U.S. Household Income (%)	71.1	76.7	84.3	70.2	85.9	77.5
Farm Households Negative Household Income (%)	8.8	8.9	10.1	13.3	8.5	10.3
Farming Occupation - Higher Sales						
Number of Farm Households	18,217	9,919	47,182	31,340	18,573	125,230
Average Total Household Income ($)	56,405	53,455	70,544	54,683	79,194	64,447
Household Income from Off Farm Sources (%)	50.3	66.5	58.9	64.1	68.2	61.1
Average U.S. Household Income (%)	84.7	80.3	106	82.1	119	96.8
Farm Households Negative Household Income (%)	8.2	14.7	14.2	16.3	13.3	13.8
Large Farms						
Number of Farm Households	11,590	9,291	34,149	19,129	12,023	86,182
Average Total Household Income ($)	79,761	96,592	100,311	131,945	98,135	103,864
Household Income from Off Farm Sources (%)	54.3	57.2	51.4	71.8	54.0	58.4
Average U.S. Household Income (%)	119.8	145.1	150.7	198.2	147.4	156
Farm Households Negative Household Income (%)	16.4	13.2	14.1	18	21.6	16.2

Table E-2. 2006 Farm Household Income by Farm Typology and by Region (cont'd.)

Parameter	Region					
	Atlantic	South	Midwest	Plains	West	All Farms
Very Large Farms						
Number of Farm Households	10,270	12,509	22,016	13,202	13,893	71,890
Average Total Household Income ($)	228,058	200,334	228,071	222,264	371,088	249,815
Household Income from Off Farm Sources (%)	20.1	25.7	20.2	25.5	16.9	20.9
Average U.S. Household Income (%)	342.6	300.9	342.6	333.9	557.4	375.3
Farm Households Negative Household Income (%)	11.2	14.4	14.2	15.7	18.8	15

Source: USDA ARMS 2007.

Table E-3. Top Ten States for Aquaculture Sales in 2005 with 1998 Comparison.

Location	2005		1998		Percent Change 1998-2007	
	Farms	Sales ($1,000)	Farms	Sales ($1,000)	Sales ($1,000)	Farms
U.S.	4,309	1,092,386	4,028	978,012	11.69%	6.98%
Mississippi	403	249,704	419	290,382	-14.01%	-3.82%
Arkansas	211	110,542	222	84,120	31.41%	-4.95%
Alabama	215	102,796	259	59,694	72.20%	-16.99%
Louisiana	873	101,314	683	53,220	90.37%	27.82%
Washington	194	93,203	91	56,646	64.54%	113.19%
California	118	69,607	120	43,509	59.98%	-1.67%
Florida	359	57,406	449	76,696	-25.15%	-20.04%
Virginia	147	40,939	294	24,629	66.22%	-50.00%
Idaho	35	37,685	38	35,919	4.92%	-7.89%
Texas	95	35,359	81	20,403	73.30%	17.28%

Table E-4. Top Ten States for On-Farm Employment Expenses for Aquaculture Activities

Location	Farms	Employment Expenses ($1,000)	Total Employees
U.S.	2,276	168,724	10,519
Washington	114	24,711	1,284
Mississippi	242	24,452	1,376
Louisiana	555	16,969	1,820
Arkansas	139	14,955	740
California	71	14,762	571
Florida	195	12,410	793
Virginia	83	8,712	485
Alabama	121	6,495	403
Texas	55	4,389	316
Connecticut	20	4,372	133

Table E-5. 2005 Employment and Wage Disbursements for Top Ten Aquaculture Employment Expense States.

Location	Number of Jobs			Aquaculture Employment as a Percent of Total Farm Employment	Wage Disbursements ($1,000)
	Total Employment	Farm Employment	Off-Farm Employment		
Washington	3,028,482	42,461	2,986,021	3.02%	$125,845,338
Mississippi	1,216,459	7,433	1,209,026	18.51%	$35,793,423
Louisiana	1,998,858	7,221	1,991,637	25.20%	$66,217,281
Arkansas	1,248,575	11,332	1,237,243	6.53%	$38,257,689
California	16,069,656	178,408	15,891,248	0.32%	$736,185,081
Florida	8,277,750	44,977	8,232,773	1.76%	$302,718,622
Virginia	3,946,218	9,148	3,937,070	5.30%	$166,470,157
Alabama	2,059,122	7,727	2,051,395	5.22%	$69,902,655
Texas	10,266,661	46,372	10,220,289	0.68%	$407,280,953
Connecticut	1,750,575	5,280	1,745,295	2.52%	$90,536,062